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Copyrighting Package Features

By WALDON FAWCETT

THE more extensive and the more conspicuous becomes the use of the package as an instrument of merchandising, the more valuable grows the business good-will bound up in the familiar and recognizable package. When the consuming public comes to specify-by-package in buying and to verify the origin or identity of purchases by package appearance, the packer is justified in regarding the "personality" of his package as his most precious intangible asset. Given this appraisal, it follows that the established package design needs protection and insurance.

Due to sheer multiplication of varieties of packages, no less than to the sharpening of competition in all lines of packaged goods, there is ever-increasing need for safeguards against package imitation and infringement. More to the point, it is highly desirable that the protection shall be preventive rather than remedial. So large has become the field of packages and so rapidly come the additions, that no business executive can hope to keep tab on all newcomers as they arrive. Thus, it is entirely possible for a simulative or duplicating package to gain considerable distribution ere the pioneer user of the type of package is even aware of the presence of the "double."

In this alarm that reminiscent packages are crowding and overlapping one another, it is only fair to say that much of the duplication or near-duplication is unconscious or unintentional. This innocence of malice does not, however, prevent or cure the confusion in trade which is so apt to result from double-tracking of package design. The originator of a package pattern needs protection no less from after-sharers of the same inspiration than from the most conscienceless pirate. To deal with the latter the package creator needs authoritative recognition of property rights that will put the poacher to rout if, indeed, it does not deter him from trespassing at all. To persuade the unwitting interloper to withdraw, the prior packager at least requires conclusive proof that he was first to adopt and use the coveted package dress.

Protection for packages, that looks to the future as well as the present, needs to be national or country-wide in scope. Even if a packager is, for the time being, confining his operations to a single State or, perhaps, to one locality, he cannot say when or how rapidly he may wish to extend his distribution. Or, even if he foresees no larger destiny for his own enterprise, he might find it uncomfortable were package twins, originating afar off, to come to the very borders of his walled market. And they could approach that close before the common law of unfair competition would stop them.

SEVERAL forms of actual and anticipatory protection for package features are obtainable, for long periods and at nominal cost, from the Federal Government. All business men know these legal shelters by name. "Copyrights," "trade-marks," and "patents" are the terms expressive of the several agencies to a common end. But, despite the familiarity with the designations, a large proportion of the packaging industry has actually a vague and hazy idea of the nature and functions of these mediums of protection. In some instances the terms above mentioned are used interchangeably. To make matters worse, they are mixed up indiscriminately with such terms as "brands," "labels," "trade names,," etc.

The trouble arises from a loose use of the titles of the various protective forms. Very often this produces a paradox. The layman talks about "copyrighting his trade-mark" when, literally, such a thing is not possible. Or, again, the unsophisticated is persuaded that because labels and advertising prints relating to articles of manufacture are entered or enrolled at the U. S. Patent Office it is the proper usage to refer to them as "patented." The mix-ups come about the more readily because the various States of the Union have their own facilities for issuing credentials to industrial property used in intrastate commerce within their borders. State administrators take liberties with the terms that have the most definite meanings at Washington.

Because the copyright is the broadest and in many respects the most important good-will fortification that is available to the package user, it is important that he know something of what this versatile agency will do for him, even before he takes stock of his other resources of defense. Roughly sketched, the U. S. copyright system might be described as Federal machinery for granting monopolies of use to the creators of artistic and intellectual productions. Most of the popular mystification which has arisen with respect to copyrights is due to the circumstance that many persons do not understand that there are two separate and distinct species of copyrights, handled through different clearing houses at Washington.

ONE branch of Uncle Sam's copyright service is devoted to subject matter that is more or less within the range of the fine arts. This class of copyrights are "entered" at the Copyright Office, a branch of the Library of Congress. Thus, if a producer or distributor wants to fence off the picture that adorns an art package or gift package, he applies to the Registrar of Copyrights. Meanwhile, equivalent protection has been provided in another quarter for the copyrightable subjects that might be designated as more useful than ornamental.

At the Trade Mark Division of the U. S. Patent Office, which latter is, in turn, a branch of the Department of Commerce, there is a copyright annex which receives copyrightable prints and labels that are designed for use on or in connection with articles of manufacture. It is through this channel that packagers must seek copyright protection for most of their package features. For the outer "dress" of a package, even unto a complete wrapper or the carton blank in its entirety, is usually rated as a "label," provided it bears reading matter or pictures that "describe" the package contents, as required by the law and the regulations. In some respects this copyright at the Patent Office is liberal and elastic in its requirements. But it is a mistake to assume that there is waived entirely the artistic requirement that is so conspicuous in the case of general copyright. It is no easier to obtain entry at the Patent Office than at the Library of Congress for a package lay-out that is merely an example of the typesetter's skill, instead of the product of a designer.

The muddle in some minds perturbed over package protection is made the worse by the fact that many folks, including some officials, speak of "registering" labels when they mean copyrighting at the U. S. Patent Office.

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Strictly speaking, it is only trade-marks that are registered. And a technical trade-mark is required by law to be the opposite of a copyrightable label in that it must identify an article without describing it, whereas the label must describe the article to which it is attached. Given this sharp distinction, it follows that a registrable trade-mark, standing by itself, cannot be copyrighted as a label, even if it be the only inscription on the outside of a package. But it is entirely possible to copyright a label in which a trade-mark is one of several features. Indeed, there have been instances when a trade-mark, included in a label composition, supplied the artistic qualification without which the label would not have been eligible.

The "print" angle of the copyright structure has little significance for those who think only in narrow terms of package protection. But it does offer an entrenchment to packers who desire protection for car cards that reproduce the package and for cut-outs, dealer-helps, counter and window displays that glorify the package. To obtain copyright as a "print" or an "advertising print" the piece of printed matter must describe the goods but be intended for use in connection with the merchandise rather than for use on the goods as is a label.

TO obtain, at one swoop, complete, all-embracing protection for a package covering its characteristics of size, shape, outline, decoration, color scheme and closure is virtually impossible. The copyright route comes nearer to it, however, than trade-mark registration. It is absolutely impossible to secure at Washington a certificate which recognizes a container as a trade-mark for its contents. No better is the chance of basing a trade-mark franchise on the color of a package. If a package is adorned with a red circle, a green cross or a purple crescent, the particular design in color will be allotted to a first user. But it is hopeless to aspire to fence off a color as such, no matter whether the color envelopes an entire package or is confined to some structural feature such as a flap or a cap.

Copyright comes nearer to the ideal of consolidated protection for the package. Even here limitations are encountered. The form, outline, and even the surface ornamentation of a container, if fresh, original, and the fruit of inventive skill, may require a design patent as one line of defense. But the copyright administrators will accept as a "label" the essence of the package set-up. The package wrap in its entirety, and the carton blank, complete, have been put under blanket copyright. On the other hand, however, it is observed that some of the shrewdest and most successful of packagers consistently employ a protective technique that is exactly the opposite of the inclusive method.

The alternative policy in package protection is that which seeks to fortify the package by invoking separate safeguards on as many different elements or features of the package get-up as will support individual grants of monopoly. A resourceful packager may have, to begin with, several underlying trade-mark registrations. Say, one on the brand name, another on a symbol or device, and a third on a slogan. There is no objection to the use of two or more trade-marks on the same package. In like fashion, details of the package ensemble may be copyrighted as labels, provided these units of the design are severally artistic and describe the goods.

How multiple features buttress the package is indicated in the case of Colgate's Tooth Paste, which has four copyrighted labels on one box. National Biscuit Co. mounts on each of its best sellers a battery of package plasters, each duly protected, that collectively deliver a formidable broadside of identification. Pinaud's Eau de Quinine carries, on each bottle, six different labels, several bearing an autograph signature so that imitation would constitute forgery as well as infringement. Several of the firms that have thus pyramided the separate features of the package assembly report that attempts at imitation have been fewer since the reinforcement. At the expiration of a copyright term the copyright may, by payment of $6, be renewed for a further period of twenty-eight years, so that long protection is available for the package designed to be permanent.

Packages in Window Displays

THERE is no need to prove a case for window and counter displays. The fact that the annual expenditures made by retailers and manufacturers for display material totals $100,000,000 should be considered sufficient evidence to show the importance of this form of sales stimulation and appeal. The general functions of such displays, as they affect retailer and manufacturer, are stated by Carl Percy in his book, "Window Display Advertising," as follows: (1) Establish the character of the store and the character of the merchandise; (2) Sell the institution and its policies; (3) Specialize on certain profitable items depending upon the people drawn into the store for the sale of other merchandise; (4) Feature special sales; (5) Endear the store to the public by window displays of general or civic interest.

ASSUMING that the manufacturer, in the design and making of his package, has incorporated therein the essentials to attract attention, he is naturally concerned with the distribution of that package in as many directions as possible. The package appears on the shelves and counters of the retailer and wins a recognition in proportion to its comparative value with other packages used to contain similar or different products. In newspaper, magazine and other forms of advertising, he reproduces that package, emphasizing, perhaps, some of its outstanding features—utility, convenience, shape, color, etc.—and this publicity furnishes an excellent tie-up with the retail-store showing of his containers. What is more logical, then, than that he should continue the use of his package as one of the features in his window display?

Mr. Percy, in the book above referred to, has outlined rules of conduct for getting the right appeal into display material, as follows: "Remember first you appeal to an audience that is on its feet and moving. Your idea must take the place of the thought that is in the mind of the passerby, but you must have first the device to attract

attention to your thought whether it be design, color or statement. Your appeal should be so designed as to be of as nearly personal interest as possible to your prospect. By direct statement, inference or the employment of device of common knowledge, your idea must make the passerby relate himself to your idea or, in other words, bring himself into the picture. In the arrangement of the elements of the display, put your main appeal in the center of the stage, subordinating your supplementary appeals or sales arguments. Vitalize and dramatize by action or word whenever possible. Avoid passive action or passive statements."

Given an outstanding container design, each of these points can be realized—and in many cases, supplemented—by the use of the package. With the package as one of the elements of a display it is possible to incorporate one or perhaps more of several buying motives. The appeal may be made to any one of the following motives: health, pride, price, human traits, operation or convenience.

If, then, a manufacturer has designed his package sufficiently attractive to compel sales from the retailers' shelves and counters, it is reasonable to believe that the utilization of that same package, dramatized in a window or counter display which supplements with arresting or intriguing information relating to the quality and application of his product, secures a better and more profitable hold on his market for sales. Furthermore he is cashing in on the investment which he has already made in his package design and the plant equipment necessary to produce the package.

Ink in Package Making

By ARTHUR S. ALLEN

BEAUTIFUL design, the finest choice of color and carefully prepared board are all for naught in the making of a package unless the proper inks are used. The cost of this item is generally such a small part of the total that often little attention is paid to it. The customer, designer, and producer know little about this small part of the plan and give less attention to it than it deserves.

There are many instances where work has been ruined, not because the inks were not well made, but because consideration was not given to the way the job was to run, or to the timing of one color with another. A valuable rule to keep in mind is that in two-color printing the first color must have more tack than the second, in order that the first color will pull off the second without mixing and thus avoiding the dulling of both colors.

Below is a formula for a very satisfactory box ink to run on a single press on a good patent coated stock at a normal speed of 1,500 per hour.

In a possible hundred parts the formula is divided as follows:

28 parts color
38 parts linseed oil varnish
15 parts magnesia
13 parts dryer
6 parts petrolatum

The color may be composed of two or three materials—one to make the ink to meet a price and another to get the exact shade, both being practically the same color. The use of cheap materials of an approximate shade to get the price down a few cents per pound frequently plays havoc with a handsome package on which thousands of dollars have been spent to wrap a product that has taken years to develop.

The second item of the formula, the linseed oil, is of many different consistencies. This acts as a carrier of the color so that the ink will lay on the board smoothly and be held there.

Boiled oil, and other like materials, are used for the same purpose but oil must be understood so as not to destroy the balance or working qualities of the ink.

Magnesia is put in as a cheapener and often too much is added. This has a tendency to weaken the color and destroy its brilliancy.

The dryer is added to set the ink and bind it to the board. More dryer is needed if the board is not properly seasoned. If too much dryer is added it causes the ink to set too quickly, making the sheets stick together.

Petrolatum is put in to take the tack from the ink and make it possible to run the presses at high speed without heating the rollers. Petrolatum is also added to stop pulling of the paper surface. Kerosene and other oils are sometimes used for this.

It is impossible in a brief article to explain all the minute difficulties encountered in the printing of a paper box, but it is obvious that it is easy by altering the formulas given above to ruin a job of printing by giving the ink too much or too little tack, thus throwing it out of balance.

MOST pressmen know how to treat an ink to make it work, but unless they understand how it is made in the first place they may get into serious trouble by altering it the wrong way or with the wrong materials.

As ink that is carrying 25 per cent of magnesia is weakening the color as much as it should be, it would be disastrous to add 15 per cent more. It might not be detected when the printing was wet, but when it dries out, the color would show much additional weakness and be less brilliant.

An ink should be tacky enough to clean the form after each impression, greasy enough to run without mottling or heating the rollers and brilliant enough to hold its color well on a given stock.

There is always a slight variation in color owing to stock, weather, and rollers, so unless the most intelligent care is used one cannot expect perfection in ink results.

I have found it desirable to give a pressman a limit of error to work with. Provide him with, say, five steppings of color, which are made with the least amount of ink up to a full volume and then have him keep his color in the range of the three middle steppings. This method has produced satisfactory results and both customer and printer have a better understanding with less dissatisfaction because of poor work.

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Adhesives in Packaging

By E. OLDHAM

IT is difficult to imagine a much more prosaic subject than glue. Of all the various factors which enter modern packaging glue is probably and unfortunately considered the lowliest by the average manufacturer. The probable reason is that glue has none of those qualities which come under the head of "consumer-appeal." The average manufacturer who packages his goods becomes enthusiastic on such subjects as package color, shape, design, etc. He will hold many conferences and lie awake at night trying to determine whether this color or that design or a certain style of lettering will create greater consumer-demand, and lastly he will think about glue for labeling, wrapping or sealing, if indeed he thinks about it at all. Often he buys the cheapest and most easily attainable adhesive, as long as it appears to "stick." Of course there are some notable, outstanding exceptions to this rule. A few of the large, successful packaging organizations, realizing the importance of glue in packaging, give as much study to the adhesives they require as they devote to the other factors of their packaging. Some often employ chemists and mechanical experts to supervise their adhesive operations. But, generally speaking, the average manufacturer who requires an adhesive to complete his package, looks upon glue as an annoyance and a necessary evil attending the packaging of his goods.

Manufacturers of adhesives do not claim that glue is the most important factor in packaging, but they do claim that glue is a vital factor, affecting not only the appearance, but the merchandising of the finished article. This claim has been corroborated time and time again by the bitter experiences of many manufacturers who gave little or no heed to the proper adhesives for labeling, wrapping or sealing their packages. In the field of labeling alone, which is a comparatively simple adhesive operation, thousands of dollars have been lost by manufacturers simply because they did not use the *right* glue for their particular labeling proposition. Many manufacturers, for instance, put up their products in tin or glass containers. They devote a lot of thought to the details of the package; they spend a good deal of money to make their containers distinctive and appealing to the consumer; they design and print expensive labels. And yet, when they come to attaching those labels to the containers they apparently think any kind of glue or paste will serve the purpose as long as it seems to "stick." The result is that many expensive and otherwise attractive containers lose their merchandising and advertising value because the labels curl or peel or fall off *after* the containers leave the manufacturing plant and *before* they reach the consumer. The question may fairly be asked: What good is a label anyway, unless it delivers its identifying and advertising message to the consumer?

WHAT has been said about labeling applies with greater force to packages which require sealing and to cartons which require wrapping because those operations are usually far more complicated than labeling Unless the proper adhesive is used for those operations packages will lose something of their compactness, neatness and attractiveness before they reach consumers, if indeed they ever get that far.

Glue is not merely something which apparently sticks, and there is no such thing as one kind of glue that will do all kinds of adhesive work. Glue is, or should be, a specially made product to perform a specific adhering operation. Different surfaces require adhesives of different ingredients and qualities. Different weights and grades and colors of paper require adhesives of different consistencies, "tackiness" and drying qualities. Different machines for labeling, wrapping or sealing require different glues or gums to suit varying styles of mechanical operation. A glue made for adhering delicate glassine wrappers to packages cannot reasonably be expected to seal fibre shipping cases.

Manufacturers who put up their products in consumer-units, whether those units be packages, cartons, bottles, jars, cans or barrels, can often save a lot of money and avoid a great deal of acceptance-resistance simply by getting the *right* glue for their particular adhesive operations. This is not any more difficult than getting the right size of containers or the right grade of packaging materials, but it is just as important. Any reputable manufacturer of glues and gums experienced in solving adhesive problems will be glad to study a manufacturer's particular adhesive requirements and prescribe a product which can be relied upon—*after* the packages leave the manufacturer's plant.

Fibre Pails and Drums

Fibre pails are used extensively by the manufacturers of candy, bakers' supplies and bulk drugs, sugar grinders, spice grinders, coffee roasters, salted nut roasters, etc.

The value of the fibre drum for the bulk shipment of food products, dyes, colors and chemicals has been demonstrated as far as the protection of the contents is concerned, and because fibre drums do not warp, shrink or dry out, the protection continues while products are in manufacturer's warehouse, in transit and also in the consumer's hands.

The use of fibre drums has also been developed for the shipment of lard, petrolatum, transmission greases, cup greases, oil silks and similar semi-solids that have an oil base. They have also been developed for tooth paste, adhesive paste, marshmallow whip and other products of a semi-solid or plastic nature which have a water base. Fibre drums are used for their cleanliness which is desirable for food products and chemicals. They are also used for their convenience in handling and for the full open top which allows free access to the contents.

In addition to the protection which they give their contents and the convenience with which they are handled, fibre drums are being used more and more for the advertising value of their exterior. Being straight-sided and smooth, and having a naturally fine appearance, they lend themselves to attractive display labels and they enable the shipper of products in bulk to apply the same merchandising principle to the bulk shipment that has been so successfully demonstrated to be profitable in the case of retail packaging.

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The Use of Package Inserts

"WHEN your customer opens your package, she or he will be glad to know how to use the goods, how to take care of them, why they are good, where to buy other goods you make and why she or he should buy other goods from you." This statement furnishes several very good reasons why the manufacturer of packaged merchandise should be interested in the use of package inserts. Another important point, and one wherein the package insert differs from many other forms of advertising, is the fact that it carries its message to a customer and not a prospect.

Package or bundle inserts may be divided into three general classes, as follows: The insert that goes into the original package sold to the customer; that which is placed by the retailer in bundles and packages that leave his store, and the insert that goes into a large container or bundle which is opened by the dealer.

Among the messages that can be carried with profit on package inserts are the following:

Refresh the mind of the buyer concerning the points that induced his first purchase of your product.

Tell the buyer how to use your product to the best advantage.

Tell the buyer of all the uses to which the product may be put.

Tell the buyer how to care for the product so that it will give the best service.

Acquaint the buyer with other products that you make or sell.

Secure names of buyers for mailing list.

Induce the buyer to send for samples of other products that you make or sell.

Secure the names of friends and acquaintances of buyers for your mailing list or for distribution of samples.

Tell the story of careful and clean handling of the product in factory and workshops.

Give the buyer information about the size and character of the company back of the product.

Make clear to the buyer the care used in the selection of materials.

Counteract specific or vindictive efforts of competitors.

Bring suggestions or information that will help you to improve your product or extend its sale to other fields.

Carry testimonials from other users to help strengthen the confidence of buyers.

The above statements relate to the value of the package insert as a merchandising factor in the distribution of goods and to the various functions which it may be expected to perform. It is interesting, therefore, to consider certain specific examples of package inserts, taking into account the forms, shapes, sizes and copy used, together with the purpose for which each insert is intended. The two illustrations which show package inserts used by the Pompeian Laboratories and the Norwich Pharmacal Co., together with the following summaries of package insert practices, are reproduced through the courtesy of the S. D. Warren Co., Boston, Mass.

The National Biscuit Co. includes in each package of cookies and crackers a slip featuring on one side another variety of biscuit in color, and on the reverse an announcement of a recipe booklet which will be sent on request. Similarly, the Loose-Wiles Biscuit Co. includes in certain packages of its products an interesting set of fairy tales and paint books for children. This company also makes extensive use of single sheet inserts illustrating "Sunshine" biscuits and presenting appropriate recipes for use in connection with them. Royal Baking Powder Co. includes in its package a die-cut insert that illustrates on one side an attractive cake, and on the other details a complete recipe for the making of this cake.

Among food specialties a number of various types of inserts are to be found. The Knox Gelatine Co. makes use of its recipe slip to offer a more complete recipe book while the Genesee Pure Food Co., who manufactures Jell-O, takes advantage of the opportunity to build good will and sales by inserting a series of nursery rhymes, fables and stories about the "Jell-O Girl." On the back of each insert is a reproduction of a dainty appetizing dessert in actual colors printed in four-color process.

Incidently, it is of interest to know in connection with the packaging of the latter product, as well as many others mentioned in this article, that such inserts are placed automatically in the containers by the same machines that are used for packaging work.

The Ralston Purina Co. and the Hecker H—O Co., on single sheet inserts, suggest ways of using their products. The Hills Bros. Co. guarantee slip also carries tempting recipes and the "Dromedary Date" insert is perforated with the date of packing and the packer's number, thereby placing a definite responsibility on that individual.

THE Minute Tapioca Co. has developed an insert plan which should interest manufacturers selling to retail dealers in small unit cases. The first insert found on opening the case contains a statement that creates good will with dealers as it includes a check number that makes it possible to trace any cause of trouble if the goods are returned. The second insert is twice the size of the first and is folded once. Opened, it becomes a window sticker, announcing a new supply of the product.

Soap manufacturers make extensive use of inserts. The Packer Manufacturing Co., for instance, inserts a printed booklet calling attention to additional uses for Packer's Tar Soap and giving complete instructions for its uses for various purposes. This is a 16-page booklet printed in two colors. The back inside cover carries a coupon order blank offering full and trial size packages of the company's products. An example of another type of insert used by this company is a mailing card which asks a number of questions concerning customer use of the product. The returns from such questionnaires can furnish valuable data for sales development.

A post card used by the Kolynos Co. requests names of friends to whom samples of dental cream will be sent, and this same practice is followed by the Armand Co. in distributing cold cream powder. The latter company also uses coupons for an introductory offer and secures additional sales for its week-end package by

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The package inserts shown are among those used by the Pompeian Laboratories to produce inquiries and new business. Their booklet of 8 pages, actual size 2¼ in. x 8 in., just fits the carton and folds around the jar. Inside pages of this contain a description of each product and a coupon order blank. With each product is included in an envelope a sample of another product for trial.

suggesting it as a delightful gift. The Odorono Co. wanted to give customers more information about its product than was possible on the label. The Odorono bottle is of small size and is not sold at retail in a carton, but by using thin paper it is possible to use a folder which measures, open flat, 10½" x 2⅞", and folded for attaching to the bottle measures only ⅝" x 1½". A cord and special clip hold the folded insert firmly in position. There is ample room for descriptions, a showing of the other products of the company and an order blank for the convenience of those who wish to order direct. Northam Warren Co. use a coupon which offers a trial-size bottle of a new product. Another insert used by this same company combines instructions with a showing of Cutex products, and a miniature letter concentrates attention on their desirability.

The Brown & Sharpe Manufacturing Co. booklet insert makes use of illustrations to show how to handle clippers. Makers of Le Page's Glue obtain a greater

This Unguentine material shows how thoroughly package and case inserts may tell a selling story. Tubes are packed in an attractive box in which is placed a concise message on the desirability of giving it counter space to tie up with national advertising. In each single tube are two inserts, one giving instructions for the use of Unguentine and the other describing other products of the company.

distribution of their "Craft Book" by means of a special offer coupon on inserts placed in packages of their products. A series of booklet inserts are printed in two colors and attractively present the story of many products for the Dennison Manufacturing Co. With some products these inserts are enclosed and in other cases merely slipped under the paper band.

In every group of industry which concerns itself with the use of packages, there is an opportunity for increased sales in the proper utilization of the package insert. So much so that the latter has come to be regarded as almost an integral part of the package itself. From the examples quoted it will be seen that there are possibilities for a variety of uses and the progressive manufacturer of packaged merchandise is offered a wide selection, limited only by the type of messages which he wishes to convey to the customer.

Correlation Chart of Color Interpretation

1. Light Values *2. Medium Values* *3. Dark Values*

HUES	SYMBOLISM	CHARACTERISTIC	MOOD	Influence	Temperature
Redpurple	2 Battle 3 Heroic Virtues 2 Valor 3 Prowess	2 Stateliness 2 Impressiveness 2 Haughtiness	3 Cold 3 Chilly 2 Tragic	SUBDUING COLORS	COOL COLORS
Purple	3 Loyalty 2 Patience 2 Fidelity 3 Allegiance	3 Dignity 3 Royalty 3 Seriousness 3 Imperialness	3 Dark 3 Ceremonious 3 Cold, Grave 3 Austere 3 Pompous		
Purpleblue	3 Solemnness 3 Majesty 2 Reverence 2 Sublimity	3 Apathy 3 Harshness	3 Stern 3 Unyielding 3 Cold		
Blue	3 Truth 3 Consistency 3 Justice 2 Sincerity	2 Tranquility 2 Calmness 1 Expansiveness	2 Passive 3 Cold 3 Deep		
Bluegreen	2 Peacefulness 2 Serenity 3 Placidity	2 Retiredness 3 Unexpressiveness	2 Sedate 3 Sober 3 Cold	TRANQUILIZING COLORS	
Green	2 Fruitfulness 2 Hope 2 Immortality 2 Prolification	2 Youth 2 Vigor 2 Life 2 Appeal	2 Cool-Passive 1 Refreshing 2 Restful 3 Quiet-Retiring		WARM COLORS
Greenyellow	2 Encouragement 1 Happiness 2 Success 1 Prosperity	1 Cheerfulness 1 Refreshingness 1 Vivacity 1 Alacrity	2 Springlike 1 Gentle 2 Stimulating 2 Flush or Warm		
Yellow	1 Supreme Wisdom 1 Goodness 1 Inspiration 1 Prudence	1 Joyfulness 1 Gaiety 1 Merriment 3 Sickness	1 Warm 1 Light 1 Joyous 1 Active 1 Stimulating	EXCITING COLORS	
Yellowred	1 Knowledge 2 Benevolence 2 Home 1 Light 2 Benignity	1 Liveliness 1 Warmth 2 Gravity 3 Somberness 3 Strength	1 Mellow 1 Warm 2 Rich 2 Luscious		
Red	2 Love 2 Valor 2 Passion 2 Truth	2 Danger 2 Sanguinity 2 Fire 2 Anger	2 Intense 2 Fierce 2 Hot 2 Vital 2 Active 2 Exciting		
White Silver	Chastity Innocence Purity	Peace Modesty Reservedness	Dignified Clean Chaste		
Gray	Tribulation Humility Distress	Quietness Subduedness Repressiveness	Calm Serene Mild		
Black	Death Mortality	Gloom Darkness	Mournful Sad		
Gold	Richness Glamour Enchantment	Money Gold Glory	Glorious Powerful Distinctive		

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The Psychology of Color

By CHARLES E. VAUTRAIN

WHEN one remembers that advertising is only another name for applied psychology you will more readily realize the importance of the psychology of color in successful merchandising.

In former years all the time, money and energy spent in marketing an article were used to perfect the article itself and reduce its manufacturing cost. But we have come into a new age—the age of color. People demand beauty and color harmony in all their surroundings, color influences their purchases. Home furnishings, automobiles, radios—yes, and even in the necessities of life such as packaged food products—color plays a prominent part. If your competitor's product is in a more attractive package, all other things being equal, his sales will greatly overshadow yours.

There is nothing strange or extraordinary in this new but universal appeal of color. When you consider that color brings to the eye the same pleasurable sensation of variegated moods that music brings to the sense of hearing, you wonder why it has been so long in arriving at the position it now occupies.

Color is the one factor that can create the proper atmosphere in the advertising piece. It can convey the impression of strength, youth, vigor, dignity, royalty, warmth, coolness and so on through the entire range of feeling and emotion. It can be made to sway the minds of purchasers as a Beethoven composition sways its hearers when properly interpreted. Carefully planned color work will carry your product instantly to the mind of even the most indifferent observer.

THE selection of the proper color depends upon the specific case. Therefore, a knowledge of colors, their symbolism, characteristic mood and influence will help one to select a color or combination of colors for a package appropriate to the product or for attention value. Even a superficial study of this subject will help you determine more accurately where and how you should use red, when blue should be avoided, etc. Color, like music, speaks a language which should be known by everyone interested in merchandising. Like any word in the English language, each color has its significance, the meaning of which influences us to an extent even greater than we realize.

Red is a brilliant color which symbolizes fire, heat, passion, blood, danger; but it can also be aggressive and irritating when used incorrectly. It has great power and versatility, but its extravagant use has made it become very common. Use red only when its appropriateness can be utilized. Otherwise select some other color that offers more contrast or novelty. *Green* typifies coolness, life, restfulness and cheer. Its use in a harmonious color scheme wears well. When it approaches blue it is cold and retiring, but when it draws on yellow it becomes warm and advancing. When one studies the great scale of greens as seen in a landscape lighted up with full sunshine through the leaves, and the rich dark green in the shadows, it seems as if no other color would admit more restfulness to the eye.

Blue symbolizes truth, consistency and justice. It is a cold color, and a retiring one. Its suitability as a background is best exemplified by looking at a blue sky against which the landscape stands out with vividness. It loses brilliance, however, under artificial light and it is safer to use a medium tint. Blue used unwisely is discordant and entirely unrelated to other colors.

Purple is a color that royalty has worn since time immemorial. It is also a color of mystery because it can be hot or cold, life-giving or quietly dignified. Its stateliness is at all times beyond compare, but can seldom be used successfully for commercial purposes.

Yellow, the light-giving color, signifies life, light, cheer and happiness, but used incorrectly or in too large quantities, it is blinding and oppressive. In its highest purity, it always carries with it the nature of brightness, and has a serene, gay, softly exciting character. It excites a warm and agreeable impression and is very attractive when used with its complement—purple-blue as a background.

WITH these few interpretations it is not difficult to understand the compelling influence of color in business—it is such an important part of our every-day life. As an example, let some unknown force remove nature's colors and picture in your mind's eye what this world would be like. Or were Nature in angry and discordant mood to reverse the color balance, staining the grass with the yellow pigment of the buttercup and turn this flower to a sickly green; then intensify the severe blue of heaven to a loud purple, splashed with clouds of robin's egg blue, the world would assume the aspect of a nightmare. Nature herself proclaims the importance of color. Our reactions are beautifully pictured by Grant Allen in his essay on Comparative Psychology. He writes: "There is no element of our sensuous nature which yields us greater or more varied pleasure than the perception of color. Whether we look at the larger physical wholes, the azure of heaven above us, the purple sea beneath us, and the green meadows by our sides—or the smaller organic bodies, the brilliant flowers, the crimson foliage of Autumn, the gaudily painted butterflies, the beetles clad in burnished gold, the peacock adorned with all the hues of the rainbow, and the humming-birds decked out in ruby, sapphire and amethyst; or again the transient effects of light in the spectrum, the soap bubble, the iridescent surface of the opal, the tints of eventide mirrored in the glassy lake. In each case, we feel a thrill of pure and unselfish enjoyment which no other mere sensuous stimulation is capable of arousing in our breasts. The pleasure of color is one which raises itself above the common level of the monopolist gratification and attains to the higher plane of aesthetic delight."

The Correlation Chart of Color Interpretation which accompanies this article was evolved after several years of study and research.

To facilitate its use, the color meanings were arranged according to symbolism, characteristic mood reaction, influence and temperature of color. This method offers a ready reference to those interested in obtaining the correct psychological meaning of color. The numbers printed before each word denote the intensity of the color—1 represents extremely light hues, 2 medium hues, and 3 the dark hues.

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Folding Cartons and Display Containers

THE carton selected for any product should serve four purposes; first: it should provide a suitable container for the product; second: it should protect the product; third: it should be of such form and shape as to make the product convenient to display and handle; and fourth: it should help sell the product. Not one of these four factors can be overlooked when selecting a suitable folding carton for any product.

A carton, from the selling angle, is like a good advertisement, and therefore the same fundamental principles apply. White space, copy, color and proportion are important. The tendency to crowd in too much copy in a carton is a fallacy. A better example is to follow the example of poster artists in laying out the design for a carton—a picture, good color, name of the product, and a few words descriptive of it is sufficient—something the eye can take in at a glance and a glance is all that can be hoped for from the casual prospect who sees the carton in the window or on the shelf.

A carton has six sides—counting top and bottom—and these may be considered as space for six advertisements. Successful manufacturers, however, do not utilize all of this space, for the tendency is toward very little copy. The name of the product, an illustration, some words concerning the nature of the product, and the name and address of the manufacturer occupy the front, and the back is often a duplicate of the front. A few remarks about the preparation or use of the product may be made on the sides, the top may carry the name of the product and perhaps a picture, although this would be more valuable on the front or back, and the bottom may be left blank or treated like the top. In the case of bulk goods the net weight usually is included in small type on the front of the carton. If a long list of directions is thought necessary, this may be printed on the back, provided the list is not entirely too long for the space; otherwise only the principal directions should be printed on the carton and the complete list should be enclosed.

AS a general rule, primary colors or combinations should be used on cartons because of their brilliance. If the colors of a carton have a flat, dead appearance, they give the impression that the goods are old, whereas inks that have lustre produce the opposite impression. If dull colors must be used, they may at least be varnished.

If the carton is likely to be exposed to the sun—and most cartons are—sunfast inks should be specified.

If the carton is to contain soap, soap powder, or other alkalies, inks that are sun-proof and alkali-proof should be specified. To test the inks for alkali, use a quantity of the contents of the carton to two-thirds as much water, immerse the carton for five minutes, and let lie until thoroughly dry. This is a severe test, and any ink will lose its lustre when subjected to it, but if the inks are alkali-proof, they will not fade or "bleed."

If you have original engravings made, be sure to specify to the engraver that the plates be deep etched and that all lines and letters have good, sharp, clean appearance. All ragged edges must be removed. The engraving should be made of heavy metal—not mounted on wood. This is necessary in order to secure a plate that will stand the heavy pressure required to mould the printing plates.

You should also specify to the carton manufacturer that the original engraving is never to be used for printing purposes. Many expensive engravings have been ruined by carton manufacturers who used the original plate in order to save themselves a few dollars.

If yours is a food or food product, be sure to specify that no kerosene is to be used either in the manufacture of the board or in the printing of the carton. The use of kerosene is not at all necessary in either process, but it is often used, nevertheless. When it is it is sure to contaminate the food contents.

Any carton that is to be used for food products should have an inside Manila liner or else the product should be enclosed in a paraffin- or wax-treated bag within the carton.

Food products and others that are likely to be damaged by moisture should be sealed in a paraffin- or wax-treated bag within the carton.

If the product is one that is likely to be broken or squeezed, it should be wrapped in corrugated board before being inserted in the carton.

The form and shape of any carton should be such as to lend itself readily to display purposes and make it convenient to handle. This must depend to a considerable extent on the size and shape of the product, of course, but even that may be changed if necessary.

Any carton should be a suitable container for its product. A carton designed for safety razor blades is not suitable for hardware, for example, nor is a carton designed for corn flakes suitable for salt or washing powder. Many a manufacturer has suffered severe losses because the cartons he selected were not strong enough to hold his product.

THERE are two classes of carton board: white patent coated and Manila. If the surface of the carton is to be pretty well covered with ink, bleached Manila will be used; if a bright, white surface, with little printing or other ink is desired, then the white patent coated will be chosen.

White patent coated and solid Manila boards are all run on the same weight basis or the same finish, but composition Manila boards are generally run in thicknesses from .012 to .038, although some mills run such boards to a thickness of from .048 to .050. A board of the proper thickness to protect the product should be chosen. Of course, the calendering of the board also increases the strength and stiffness.

There are four finishes of combination boards, numbered one to four. Of these, Number 3 is the most practical and is the finish generally used on printed cartons.

One producer lost several carloads of salt because he was using a carton that was not made of the proper thickness of board, the board being soft—about a Number 1 finish—and having very little strength. He changed the specifications on the board, increasing the thickness two points and taking a Number 3 finish, and found that

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his loss in salt, due to cartons being damaged, was reduced to practically nothing. The slight increase in the cost of cartons was more than offset by the saving and by the product being delivered to the user in proper condition, thus eliminating complaints that had been coming in from jobbers and grocers.

Ordering cartons of the wrong size often causes considerable waste. Manufacturers of automobile packing and sealing machines usually furnish a blueprint with their machines showing the size and shape of carton to be used. This blueprint should be submitted to the carton manufacturer, who should then make up 500 to 1,000 blank cartons for testing on the machines to make sure they fit properly. If they are okeh, one of them should be approved and returned to the carton manufacturer. If not, alterations required should be marked on the panel or flap of the carton. It is often necessary to cut down the flap, to change the glue flap to an opposite panel, or even to alter the dimensions of the carton throughout. This is important to insure maximum production on filling and sealing machines.

W. I. Fell, in Sales Management and Advertiser's Weekly, September, 1928, "Cartons That Pave the Way to Bigger Sales."

Glazed and Fancy Paper Trade Customs

THE Glazed and Fancy Paper Manufacturers' Association customs are as follows:

Standard Rolls

1. Standard Widths of Paper in Rolls.
   (a) Ordinary Glazed, Plated and Printed Pages, 26-inch rolls.
   (b) Extra Fine Glazed, Flint Glazed, Waterproof and Embossed, 26-inch.
   (c) Fancy, 26-inch.
2. Contents of Rolls.
   (a) To be stated as the number of sheets 20 inches long by width of roll.
   (b) Glazed, Plated, Printed or any flat surfaced papers weighing not over 30 pounds to a ream 20 x 26 to contain not less than 1,500 sheets.
   (c) Paper weighing over 30 pounds to a ream 20 x 26, not less than 1,000 sheets.
   (d) Paper with embossed or fancy surface, not less than 1,000 sheets.

Standard Sheets

3. (a) A standard sheet in any grade shall be 20 in.

Colors and Shades

4. Standard Colors and Shades.
   (a) Standard stock shall be the forty (40) colors (also White and India) adopted by the Association and accepted by the War Industries Board, November 15, 1918.

Special Colors.

   (a) The prices for special colors shall be based on a quantity of 25,000 sheets (50 reams) of a standard size. Smaller quantities may be made at an advanced price based on the increased cost of production.

Variations

   (a) On all special runs the normal variations in quality, weight and shade shall be accepted.

Overruns and Underruns

7. (a) All special orders shall be subject to overruns and underruns as follows: Orders under 25,000 sheets (50 reams), standard size, 20 per cent. Orders 25,000 sheets (50 reams) or over, standard size, 15 per cent.

Prices

8. Basis of Prices.
   (a) All prices unless otherwise specified are for paper in rolls; on the basis of 1,000 sheets (or reams of 500 sheets) of a standard size or on the unit size 25 x 40.
   (b) Prices and quotations are subject to change without notice. All orders, contracts and agreements are contingent upon strikes, fires, accidents or causes beyond control.
   (c) Special colors: See Item 5.

Extra Charges

9. (a) Extra charges are made for Sheeting, Slitting or Rewinding based, unless otherwise specified, on 1,000 sheets of standard size (or on a ream of 500 sheets) or on the unit size 25 x 40.
   (b) For Sheeting standard rolls to lengths greater than 20 inches or for sheeting rolls wider than standard the charge is to be proportional to the basic rate.
   (c) For sheeting rolls narrower than standard or lengths less than standard the charge is to be the same as for standard size.
   (d) A charge in excess of the basic rate is to be made for sheeting, slitting or rewinding less than a standard roll.

Terms and Delivery

10. (a) All prices are f. o. b. mill.
   (b) Make and Hold Orders:
   All "Make and Hold Orders" are to be accepted only on condition that a specified date for the entire delivery be given, at which date the goods are to be charged and the invoice accepted for payment whether goods are ordered shipped or not.
   (c) A discount of 2 per cent may be allowed only for cash in 30 days from date of invoice, except that where several invoices fall in one month, discount may be allowed if settlement be made 20 days from the average date of those invoices.

Claims

11. (a) All claims must be made within ten days from receipt of goods.
   (b) No claims will be allowed on goods cut, printed, soiled or damaged by the received. This paragraph shall not apply to claims based on apparent manufacturing defects.

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Fancy and Decorative Papers

THERE can be no doubt in the mind of any progressive firm engaged in marketing a product through retail channels as to the extreme importance of its presentation. The market offers so many examples of well packaged articles which outsell competitive merchandise not so well packaged that any argument against the procedure is entirely refuted. The outstanding successes among packaged goods are those whose excellent qualities and extensive advertising are carried right into the minds of the buyers at the point of purchase. That is the moment which is all important. Given two articles of equal value, the attractively dressed one has the advantage.

Aside from the psychological impression of high quality contents created by a good package, attractive boxes are in themselves a very important objective in many lines. This is especially true of those articles which are purchased as gifts. The purchaser selecting an article to give another wishes it to be as attractive as possible, and will many times forego such considerations as personal choice of brands, utility and even quality. The range of merchandise falling into this class is constantly increasing. Practically all of the higher grades of candy and perfumes are purchased for this purpose. These industries have realized this phase of their sales and have constantly bent their efforts to sell the eye of the purchaser before selling the tongue or nose of the ultimate user.

UNTIL quite recently men purchased their own belts, selecting them from a rack suspended over the counter of a haberdashery. In the past few years two of the largest manufacturers of belts have advanced their products to the gift class by packing them in attractive boxes. The belt is probably no better as an article of apparel than before it was packaged, but the packaging has lifted its social status, so to speak, and has created a demand for those more attractive and more expensive. Spark-plugs will fire just as regularly if bought over a greasy counter of an automobile accessory store but the ones found under the Christmas tree are those in attractive packages. Silk stockings and filmy underwear are intended to appeal because of their delicate beauty rather than their durability, and this appeal is certainly enhanced when they are presented in a box designed to contain them rather than wrapped in the same manner as a red flannel undershirt.

There is almost no limit to the variety of articles which can be boxed—and if boxed at all the packaging should certainly be done attractively.

The package should be more than a mere protective container. The woman taking home her new hat likes to know that the box will protect the millinery from crushing, but she will swing it a little more jauntily if the package carries a hint of the beauty hidden within.

IN selecting cover designs for the package, some thought must be given to its shape and size. The form of the box will largely be determined by the article to be packaged, but even here tradition can be given a jar or two and, within the limit of good taste, originality of box shapes will enhance their appeal to the buyer. However, it is the harmony existing between box and cover design which makes the truly attractive package. Much more is needed than boxboard and splashes of color.

In designing a package to contain articles for men, a common mistake is to lean too far toward masculine somberness. The fact that a great many purchases for men are made by women should not be forgotten. Women almost invariably are attracted by bright, lively colors, but in selecting a man's gift they will usually choose strong designs—that is, straight lines, blocks, stripes or other geometrical figures. In purchasing for women they will select lively colors in more delicate designs with flowers, curves, or scroll work as the motif.

PACKAGES need not be expensive to be attractive. The difference of cost, if any, between a drab, poorly designed box and one beautifully attractive, lies for the most part in the covering. The box cannot possibly be more attractive than its cover paper and the latter is relatively a small part of the cost of the finished article. A good paper will make a cheaply constructed box beautiful, but most certainly a poor paper will ruin the best made box.

It is well, therefore, to determine the cost of the cover paper when considering the cost of the package. Although it is difficult to give exact figures on boxes in general, an extreme case might serve as an example. For instance, a box which will cut 3,000 to a ream. At $15 per ream the cover paper costs one-half cent per box; at $45 per ream the cover paper costs one cent more per box—the difference between very ordinary and beautifully designed and printed cover papers.

There are various methods of selecting the cover paper for the package. The paper may be designed especially and either die-stamped, lithographed or printed to order; or the paper may be selected from the large assortment of designs manufactured by paper mills and lithographers who stock large varieties of designs.

ONE method is to select a cover paper from lines already prepared by the fancy paper makers. There are many good manufacturers of cover papers and their assortment of designs is almost unlimited. One such house has manufactured over 40,000 cover papers. Of course, all of these designs are not carried in stock but a sufficient selection is available to meet the demands of almost any package. This method of buying paper enables the box designer to see the completed package, to compare it with others and, having finally determined on the cover paper desired, allows him to purchase such as required.

An objection offered to buying papers from stock is that they lack individuality. This phase of the question can usually be arranged with the paper house under an agreement whereby they will not sell the same design to competitive lines and, in fact, many of them are willing to confine to the exclusive use of the original purchaser the design selected. A number of large manufacturers select their papers in this manner and are quite satisfied that their packages possess sufficient individuality to identify the products.

Such paper companies are usually equipped to manufacture their regular designs in special colors or to create new designs, if required, in comparatively small quantities. Most of them have an assortment of designs delineated by staff artists to be made when ordered and some keep a reserve supply of finished designs to be assigned to the purchaser. In such cases completed

sample sheets needed for experimental work can be obtained.

On some packages it is advisable to have the brand name and description of contents prominently displayed. Especially is this true of articles such as foodstuffs which are sold in hermetically sealed boxes and of articles not easily distinguishable from competitors' merchandise. But such advertising displays detract from the appearance of the better grade packages, and it is quite possible to design a package which instantly identifies itself with the manufacturer and his product. The purchaser of a gift does not want the package to look like a billboard, and the same advertising value can be obtained with a small label designed to harmonize with the rest of the package or the merchandise itself can be marked with the trade name.

That industry which has done more in advancing the art of packaging than any other, depends most on its packages and is at the same time the most keenly competitive, is the cosmetic and perfume trade. Yet, very few of these manufacturers use their packages as signboards. They all depend on the package itself to identify the product, placing their trade name on the box in such a way as not to detract from its beauty. The package is the identifying feature and the name can only be distinguished upon close inspection.

Candy manufacturers at one time displayed their name quite prominently across the top of their packages. Today, however, those producing the better grade of confectionery depend on the package and its cover paper to attract the sales attention and are either die-stamping their names or trade marks in one corner in clever little designs, giving the effect of a beautiful label, or are pasting a label which has been designed to conform to the rest of the package in such a way as not to detract from the appearance.

An attractive package will sell a good product. It will help a poor one. There is no merchandise so attractive that its appearance cannot be helped by a beautiful package. If this seems doubtful, buy an orchid at the better grade shops on Fifth Avenue or Michigan Boulevard.

Gold and Metallic Embossing for Packages

GOLD is a metal which from the beginning of history signifies all that is most valuable and beautiful in the material things of life. We learn that even as far back as the days of King Tutankhamen, roll leaf played a most important part in the embellishments of that day. In our present age the "gold standard" is still the symbol of the best of everything in our every day life.

The use of gold and gold effects in modern printing and decorating has been widespread but has serious limitations either in the cost of application or in the quality of the finished result. The bookbinder turning out an article retailing from $2 up could afford to apply a coating of liquid sizing to his book cover, lay on laboriously by hand a leaf of genuine gold beaten by the old hand methods which have not changed for centuries, strike an impression with a brass die on a heated press and then remove the excess gold by manual brushing. Truly, this is a crude and expensive process in this age of speed and economy. The cost of this method in labor and in materials has precluded its use except on articles of permanent value.

About thirteen years ago an entirely new and unique method for producing gold embellishments was developed in the United States. This new process soon won wide recognition in a number of fields, and is today very largely used for producing high-class genuine gold and imitation gold leaf embossing at a cost far below the old hand methods, and comparable with bronzing work.

THE material used is roll leaf. This consists of a light web of strong paper on which is mounted a thin film of genuine or imitation gold. On top of the gold is a light coating of dry adhesive. This roll leaf is placed between a heated brass die and the material to be decorated and when pressure is applied the gold film releases from the paper webbing and adheres to the article only where it is struck by the die. Simple and inexpensive attachments are obtainable, which automatically feed the leaf from rolls up to 600 ft. in length. These attachments are made in various models so that almost any ordinary platen press will do the work with the addition of a heating plate to warm the die. Since an embossing die can be used as well as a flat die, the gold leaf is applied and the embossing is done in one operation which greatly simplifies it and produces perfect register and saves an operation. The results obtained cannot be exceeded in beauty by any other method and the lustre of the imitation gold remains bright and untarnished for a long time.

The statement has been made many times and has been proven true, that the appearance of the package influences the sale of the article to a large degree. In the candy and perfumery industries, for instance, the merchandise is sold in a great majority of instances purely on the external attractiveness of the box.

Today roll leaf is being used extensively in the decoration of jewelry boxes, perfumery, cosmetic, confectionery and writing paper packages, razor cases, silverware boxes and numerous other articles. Such leaders in their fields as Page & Shaw, Inc., H. D. Foss Co., Daggett's Chocolates, Whitman's, Whiting & Cook, Inc., and DeVilbiss Manufacturing Co., are using roll leaf decorated packages with good results.

The application of roll leaf is not limited entirely to gold effects but can be obtained in silver, a wide range of metallic colors and also in flat colors including black and white. The results obtained with these various colors are distinctive and quite different from ink.

Uses of the Paraffined Carton

By M. DALE OGDEN

PARAFFINED containers are being used extensively every year for packaging butter, ice cream, oleomargarine, meat products, nuts, etc., because of a definite service that waxed cartons perform for these and like products. An outstanding example is shown by the increased sale of print butter in paraffined cartons. To one not conversant or directly concerned with the uses of the paraffined container, the thought that first comes to mind is of the butter and ice cream cartons. It is true that the dairy industry represents the principal market for paraffined containers, but it is likewise true that many wax-treated containers are being used every year for various other products.

Literally, the paraffined carton is still in its "teens." It was about sixteen years ago that a waxed carton, designed to be used as a butter container, first came to notice. This was made of manila board and plain type adorned its sides and ends, proclaiming a brand name and description of contents. Since this commendable advance, though comparatively crude method of packaging butter prints, rapid changes and improvements have been made in the process of manufacturing the paraffined carton.

THE first and foremost function of a paraffined container is to afford moisture-proof protection. While maintaining and protecting the moist product which it contains, the penetration of moisture through the carton walls from the exterior is also prevented by its use. The packaging of cheese represents an example of the former; the storing of products in a moist atmosphere, such as iced refrigerators, an example of the latter. The paraffined carton performs another function in its ability to protect contents against contamination by foreign odors. Butter, lard, oleomargarine and like products have an affinity for taking up odors from vegetables, fish, and so on, that may be in close proximity. We might say, then, it is one of the virtues of the paraffined container to maintain the original sweetness and purity of a product as when it was first produced. These main features, plus the sanitary handling that is afforded from exposure to dirt, etc., put the paraffined container in position to perform a valuable service for the group of products to which it is adapted.

The wax treatment that was given the first paraffined carton was secured by applying hot paraffine to the surfaces of the container, then cooling by a blast of air. The same process is still followed with the use of improved machinery. This "hot wax" treatment may be recognized by the dull finish it gives to the container.

In later years the "hot wax" treatment has been replaced to a considerable degree by the popularity and attractiveness of what is termed as the "high gloss" finish, or "cold wax" treatment. This particular treatment is accomplished by the quick immersion of cartons, printed and cut, into a bath of hot paraffine which is maintained at a fixed temperature. Following this, they are immediately chilled in a bath of ice-cold, pure, flowing water. This process not only makes for an improved appearance of the carton itself compared with the old-style, dull-finished job, but it likewise affords speedier production. The "high gloss" paraffined carton gains its name from the bright, reflecting, paraffined surfaces of the container. This method of waxing cartons after they have been cut insures paraffine being applied to the edges as well as surfaces of the carton and prevents moisture being absorbed by the carton board in any way. This is mentioned to illustrate an improvement in manufacture over a process once followed in cutting and scoring cartons after they had been printed and paraffined.

WITHIN the last two years a new process of paraffining containers has come into use which is known as the wax saturation process. This is a treatment adaptable for pure solid sulphite carton board. The paraffine is impregnated into the fibres of the carton stock, leaving no wax on the surface. The hot wax and cold wax treatments just described are both methods of applying paraffine to the surfaces. The printed design of a package is not interfered with by the wax saturation treatment; rather, it is enhanced, since a certain transparency to the carton stock is obtained. A product is given the same protection against moisture and other exterior elements by this process as in the hot wax or cold wax treatments. There is an additional factor in that the container may be handled without any possibility of any exterior paraffine being rubbed off on to one's clothing, or being scraped off in contact with the product.

A few words regarding the gluing of paraffined cartons. The first paraffined containers were waxed "in the flat" and remained so until they were wrapped about the print of butter, brick of ice cream, or whatever product they were intended to protect. Later it became desirable, as well as necessary, to produce a paraffined container that was glued along one side and with flaps that would tuck in at both ends. Several years of patient research and experiment were required before a dependable machine was developed that would perform the operation of folding and gluing a paraffined carton. The problem encountered lies in the fact that glue will not adhere to a paraffined surface. So that it was necessary to remove the paraffine from certain portions of the container preliminary to a gluing operation. A machine was finally perfected whereby paraffine is removed on certain surfaces of the carton, water-proof glue applied and the carton folded into shape so that the glued surfaces might adhere to each other. Thus one of the biggest problems in the manufacture of glued, paraffined cartons was overcome with a considerable saving in time and labor for carton users.

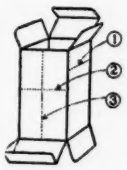
With the widespread popularity of containers with a paraffined treatment, together with the many new uses to which they are being applied, it is natural that the past sixteen years have witnessed rapid improvement and refinement. These many changes are apparent in the present use of colorful, attractive designs, improved type-composition and the adoption of certain types and sizes of packages best suited to the consumers' requirements. The grade of carton board has also been subjected to improvement. Where cheap manila stock was once used (with doubtful guarantee of sanitation), we find today the greater percentage of paraffined containers made up of pure bleached sulphite lined manila board, ideally adapted both from the standpoint of strength as well as sanitation for handling the most delicate foodstuffs.

XUM

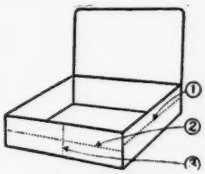
Specifications — Cartons and Display Containers

By EDWARD N. TINSLEY

A VERY frequent cause of error and misunderstanding in connection with folding boxes, is the matter of specifications. A simple convention governs the manner of presenting specifications. It is generally understood and accepted by the industry, and adherence to the rule greatly facilitates mutual understanding.



CARTON

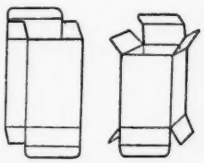


DISPLAY CONTAINER

Shown above are diagrams indicating by number, the sequence in which specifications are to be presented, thus, in the case of either carton or counter display container, the following will apply:

1st—Front to back
2nd—Side to side
3rd—Top to bottom

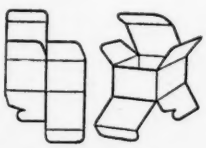
All measurements are understood to be from center of crease to center of crease.



REVERSE TUCK CARTON:

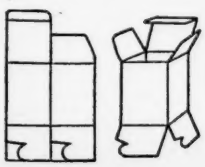
Popular style for low priced candies, toilet and pharmaceutical articles, extracts and other products. Easily set up by hand, and may be packed automatically. Conveniently opened and closed for removal of contents, as used. Economical in manufacture because cartons interlock.

REVERSE TUCK CARTON WITH ARTHUR LOCKS:



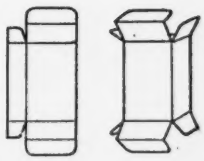
Same as reverse tuck, except bottom side flaps lock to prevent heavy contents from falling through bottom. Used principally for packing jars and bottles containing toilet preparations, medicines, condiments, and other heavy articles. Sometimes made with Arthur side locks both top and bottom, to hold flat round jars and similar objects securely.

TUCK TOP, ARTHUR LOCK BOTTOM CARTON:



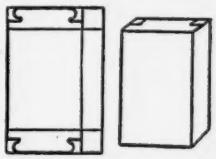
This style is used but seldom, and is primarily designed to hold very heavy jars. The double locking device at the bottom prevents the bottle or jar from breaking through. Satisfactory for ink bottles and cream jars.

STRAIGHT TUCK CARTON:



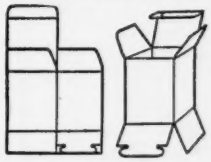
Has no advantage over the reverse tuck carton except that it is required for operation on some automatic machinery. Must be made with right and left glue seams to secure the economy of interlocking in manufacture. This is not desirable because on half of a run of cartons the rough edge of the glue seam shows at the front of the box.

GREENLEAF CARTON:



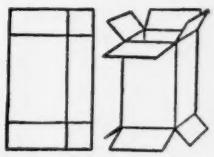
Locks at each end securely. Extensively used for packing dried fruits and other heavy or bulky food products; also as shelf containers holding individual packages in sales units.

TUCK TOP, GREENLEAF BOTTOM CARTON:



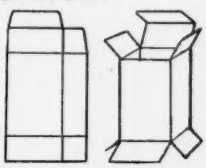
An adaptation of both styles, permitting the security of the greenleaf lock on the bottom and the convenience of the easily opened and closed tuck top. Used for the larger candy packages, heavy food products, shelf containers and many other purposes.

SEAL END CARTON:



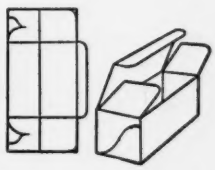
The most popular style carton for packing flour, cereals, sugar, salt, teas, coffees, spices and many other food products, soap powders and other cleansing preparations. Difficult to seal by hand; but packed and sealed on automatic machinery, it reaches the consumer with the contents untouched by human hands.

SEAL BOTTOM, TUCK TOP CARTON:

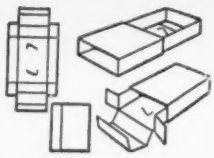


Handy as a pocket package for cough drops and small candies. Has the advantage of the solidly sealed bottom and the convenience of the easily opened and closed tuck top for the free use of the contents. Packed on automatic machinery. Not adapted to hand packing.

COLONIAL LOCK BLANK:



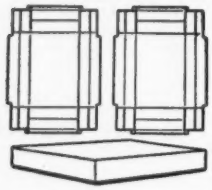
A folding blank, supported when set up by interlocking hooks and catches, requiring no gluing either by the box manufacturer or the user; very economical because of sheet layout. In universal use by biscuit and cracker manufacturers and is generally enclosed in a sealed, printed wrapper.



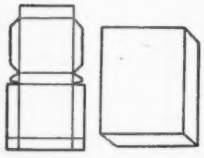
TUBE AND SLIDE BOX:

Consists of a folding blank variously contrived, to be inserted in a tube. Its two piece construction makes it substantial enough to be carried without damage in the pocket of the consumer. It permits the easy removal of one article without spoilage of those remaining. It is extensively used for cigars and cigarettes.

TWO-PIECE PROSPECT BLANK:

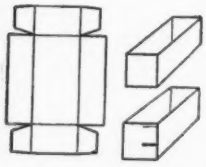


Two piece box made up of blanks folded by hand. The ends overlap and are held against the side by friction. The cover may be made full or part depth and the blank glued at the side affords additional reinforcement, a recent development of the overlapping end blank in which an extra tab is provided as an extra protection at the corner. A similar reinforcement along the sides can be provided without the necessity of preliminary gluing. This style is the most recent development of hand assembled telescope box. It has many decided advantages in the textile industry, where it may substitute for a solid box.



BRIGHTWOOD BLANKS:

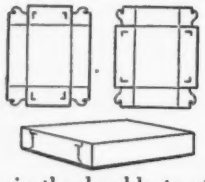
Brightwood machinery is installed in the user's plant for the sake of setting up and gluing two styles of blanks.



The one piece blank is folded and automatically glued along the vertical panels by a carton forming machine, which automatically fills and seals it. It is necessary for the user to have sufficient production to gain the economies made possible by the automatic equipment.

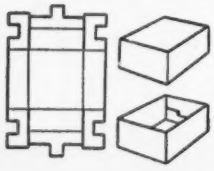
The two piece style machine is fed blanks which are automatically glued into box and cover. The types are various—the cover may fit over the box to its full length, or only part way.

TWO-PIECE HOOK CATCH BLANK:



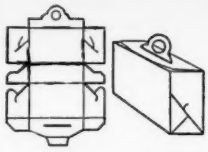
An economical style of telescope box, in which hook catches at the four corners hold the box and cover in place; very economical to manufacture, but difficult to set up. This style is not sufficiently durable to stand transportation or rough handling, but is a particularly suitable box for the clothing and florist industry.

TWO-PIECE OVERLAPPING BOLT END BOX:



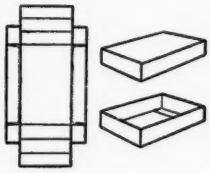
This box is very secure. It is used extensively for packing hardware and other heavy matter where the added strength of the full telescope feature is desirable.

THE SATCHEL PACKAGE:



A folding blank similar to the Colonial Lock Blank, which is held together by interlocking hooks and catches fitting together on the side panels. This box has the additional feature of a patented tongue and a handle which helps to secure the cover and economically substitutes for the tape formerly used. Commonly serves for packing confectionery, animal crackers, and the like.

TWO-PIECE FULL TELESCOPE OVERLAPPING ENDS CARTON:



A good substitute for a solid box—is economical to manufacture easily set up by hand, and makes a very neat, substantial package. It is used very frequently for candies, also for dry goods, clothing, etc.

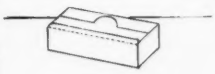
POURING SPOUTS APPLIED TO SEAL END CARTONS:

There are a number of different devices applied to the top panel of an ordinary sealed carton to permit of easier access to the contents, but one of the most unusual, is the one illustrated. The pouring spout is fashioned from the top flaps of the carton, and when properly operated by the housewife, is formed into a spout which may be opened and closed at will. Patented.

CELLOPHANE WINDOWS APPLIED TO ORDINARY CARTONS:

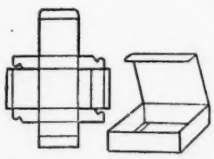
Manufacturers of candies, cakes and other products usually bought on sight are desirous of having their folding cartons made with a window to reveal the contents. Formerly, gelatine was used, but of recent years, the product known as Cellophane has made rapid stride and is often used in its place.

BROAD-WAY OPENER BOX:



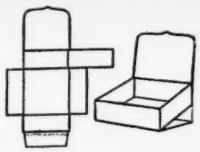
A new development in cartons that permits of inexpensive automatic filling through the ends of the cartons after which the ends are sealed and the box is opened the broad way, hence, the name. This box may be also finished to form a counter display container without impairing the economical filling operation. Patented.

ONE-PIECE OVERLAPPING END AND FRONT AND DISPLAY BOX:



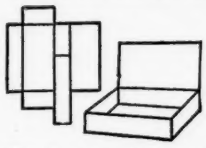
Economical to manufacture and extensively used for display purposes, this box has the added strength of the overlapping front which is not provided in the straight front box. The box can be made with the Panel-Fold style display top, making possible the economy of printing on one side only.

TINSLEY COUNTER DISPLAY CONTAINER:



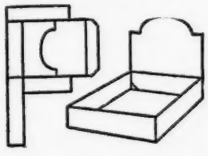
A box of patented design, so contrived that the cover folding under, proves an easel support to display the goods. A remarkably successful type of display box because of its simplicity in construction, its ease in setting up, and because it has sufficient strength to act as a combination carrying and display box. It is susceptible to fine printing required on one side only. The display panel is held at the proper angle by a supporting flap. Much of the universal success of this box is due to the fact that it is easily converted from a carrier to a display container by the retailer.

CLIMAX COUNTER DISPLAY CONTAINER:



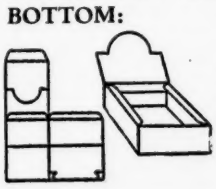
Very simple to set up. Lies flat on the counter. A protective cover is necessary, making the box more expensive than The Panel-Fold which has no cover. Requires printing and coating one side only. Display panel is equipped with supporting flap.

PANEL-FOLD COUNTER DISPLAY CONTAINER:



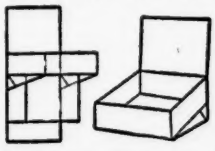
Simple in construction and setting up. Cover is so arranged as to make an attractive display panel. Protective cover is optional. Stands flat on the counter. Requires printing and coating one side only. Display panel is equipped with supporting flap.

PANEL-FOLD CONTAINER WITH LOCK BOTTOM:



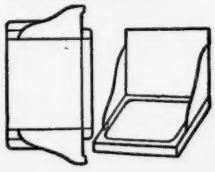
Similar in general appearance, to the Panel-fold, except that the locking device is on the bottom. This makes possible gluing of box on automatic machinery, with resultant speed and economy.

SIMPLEX COUNTER DISPLAY CONTAINER:



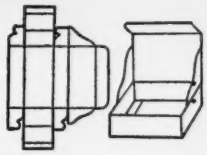
Simple to set up. Special easel feature permits tilting at different angles. Principal feature is simplicity with which dealer may display the goods at an angle. Protective cover is necessary, making box more expensive than the Tinsley display container. Requires printing and coating one side only. Display panel is equipped with supporting flap.

FIVE PANEL COUNTER DISPLAY CONTAINER:



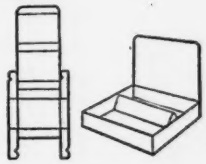
Old established style still in limited use. Requires printing two sides and coating two sides. Somewhat difficult to fill, since the packer must insert goods from side. Lies flat on the counter. Display panel is equipped with supporting flaps.

FOUR PANEL COUNTER DISPLAY CONTAINER:



An old style, inexpensive but low in display value and strength, infrequently used today. May be made with or without side wings.

CAVANAGH COUNTER DISPLAY CONTAINER:

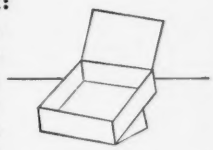


Simple to set up. Requires coating on one side of board only. Is a one piece blank. Prints all display panels in one operation. Displays contents attractively when set up on counter. Particularly adaptable for light articles. Can be used for heavy articles if tilting feature is omitted.

TILTING DUMMY DISPLAY:

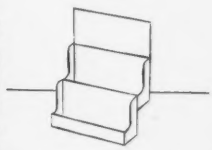
Excellent for perishable articles, like cheese and butter. Shows replicas of the individual packages, but does not hold any goods. Automatically set up by dealer as he places in the side tucks, an economical and attractive display.

ROSE DISPLAY CONTAINER:



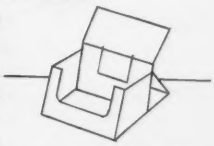
A very effective blank and one of the leading types of display containers. The cover section forms an easel, and is very readily transformed from a shipping box to a tilted display box by the storekeeper. It does, however, require printing on both sides of the board.

SKYSCRAPER (Broken Back):



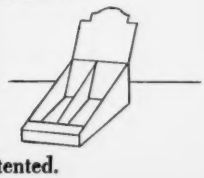
A recent addition to the field of counter display containers which displays contents in two tiers and stays on the counter in an upright or "skyscraper" manner rather than the familiar long horizontal shape. Some are made with an easel in the rear to hold the second tier in a raised position. Patented.

DARRAGH DISPLAY CONTAINER:



Another recent addition to the display container field, the main feature of which is that the contents when loaded for shipment are in an upright rectangular position, but when the box is set up for display, the contents are thrown to a stacked position and make a very attractive appearance on the counter. Also, the box is so constructed that the display panel is held in a certain position more or less rigidly and does not flop forward or backwards as do so many containers.

GAIRWAY DISPLAY CONTAINER:



An effective new type of display container in which the individual contents are packed in a staggered manner for better display. Very easy for the dealer to sell, and the contents are kept in tidy position while on the display counters. Patented.

XUM

Set-up Paper Boxes

By FRANK S. RECORDS

Secretary, National Paper Box Manufacturers' Association

ALL packages possess certain general characteristics —shape, size, color, design, type, atmosphere, display value, etc.—but there are certain advantages possessed by the set-up box and certain uses for which it is especially adaptable.

Set-up boxes create an attractive and expensive atmosphere. They influence buying habits. Set-up packing is "quality packing." Many hand made boxes are works of art, covered with silk, hand painted, lined, scored, slit,

Belt and Buckle Box

etc. They are associated with the luxuries of life—gifts, candy, perfume, etc.

Set-up boxes are durable and strong. Where the content is not consumed at once, as with candy, stationery, etc., the boxes keep the content in better condition. Combination packages are made possible through the use of the set-up box wherein can be packed several dissimilar articles. Such packages can be used to introduce new products or overcome sales resistance of one of the products in the combination. The set-up box is readily and easily opened by the consumer. Only the removal of the lid is necessary to make the contents ready for use or examination. Manufacturers who use set-up boxes are able to meet seasonal and style changes quickly and at small expense.

Set-up boxes are especially adapted for packing the following:

a. Unique, irregular outlines, curved surfaces, hexagon octagon, etc., where pasting must be done.
b. Huge-sized or bulky articles that are too large for the folding box.
c. Very tiny articles that are too small or too shallow for folding boxes—jewelry, hairpins, etc.
d. Fragile articles where hand packing is necessary to prevent breakage, or in mailing boxes.
e. Expensive articles, vanities, etc.
f. Where interior packing or a platform is necessary for display purposes or shipping purposes; manicuring sets, silverware, perfume bottles, etc., or any product with an unusual outline.

No machinery is needed in closing the box, or in setting it up. The user does not have to do anything except fill it. Set-up boxes are especially adaptable to the manufacturer whose output is small or varies greatly in size, quantity or combination, or is subjected to seasonal variation.

IN the manufacture of a simple, white glaze finished box, with white lining and a shallow lid 16 major processing operations are required, to say nothing of the sub-divisions of some of these major operations. Some of these operations have alternates—a choice between two or more methods of accomplishing the same result. The determination of which process is best in a given case depends on several factors, such as the size of the box, the quantity, the material; on the other hand, the selection of materials may depend on the process to be used. All these factors are further complicated when the box has added features or variations—printing, flies, interior parts, labels, extension edges, etc.

While it is possible to have intimate knowledge of

Inexpensive Set-up Box for Toothbrush

these factory operations and to specify them clearly, such knowledge is seldom available outside of a paper box organization. But in the matter of materials, it is quite impossible to specify in terms that may not be followed with widely varying results. The basic material from which paper boxes are made is pasteboard. This has innumerable subdivisions of quality and finish, and new variations are frequently being developed. To name several, there are chipboard, both plain and bender, newsboard, jute board, wood board, and four or five combinations of these. They may be lined in various ways, such as news sheet, news vat, book sheet, book vat, wood white vat, clay coated, glazed lined in white or colors, etc. These have various finishes, rough, medium, smooth, and very smooth. These finishes, in general, are determined by the bulk per pound and are designated by numbers. But the numbers permit of considerable variation, as No. 1 runs smoother at times than it does at others. No. 3 merges into No. 4. A given "number" in chipboard will not be as smooth as the same number in news board. The No. 3 of some mills is as smooth as the No. 4 of some others. The very nature of the stock makes it impossible to specify these details to a nicety.

Paper Boxes in a Variety of Shapes

The board generally used in set-up boxes is made to conform to a peculiar standard. That standard is always a 50 pound bundle. Hence, the thickness of the sheet is determined by the number of sheets of a size per bundle and this is known as the "count". But count means nothing unless the size of the sheet is stated with it. In short, count 50 - 25 in. x 40 in. is not the same thickness as count 50 - 20 in. x 30 in. The actual, or caliper, thickness, therefore, is determined by the kind of board, the finish on it and the size of sheet and count.

Similarly, the finishing papers run through a wide gamut of qualities under the same designation. For example, such plain papers as white glazed or white embossed moire can vary in weight, color tone, finish, and, in the case of the latter, effectiveness of embossing. Unless the name of a paper manufacturer is mentioned along with his particular designation for a certain item in his line, there can be no exact understanding of the specifications.

A Well Designed Papeterie Box

These notations pertain to the simplest kind of box and take no account of the maze of confusion involved in the specifications for more complicated structures, nor the variations in refinement of finish.

When a set of specifications is presented to a box manufacturer, he must, in his own mind, determine all these factors accurately before he can set out to compile an estimate. Under these conditions, how is it possible for any two manufacturers using the same set of specifications to determine on exactly the same details? Hence, how can bids taken solely on specifications be comparable? The low bidder may contemplate a box wholly unsuited to the buyer's purpose; the higher bidder may very possibly be the one whose product will most economically serve the buyer.

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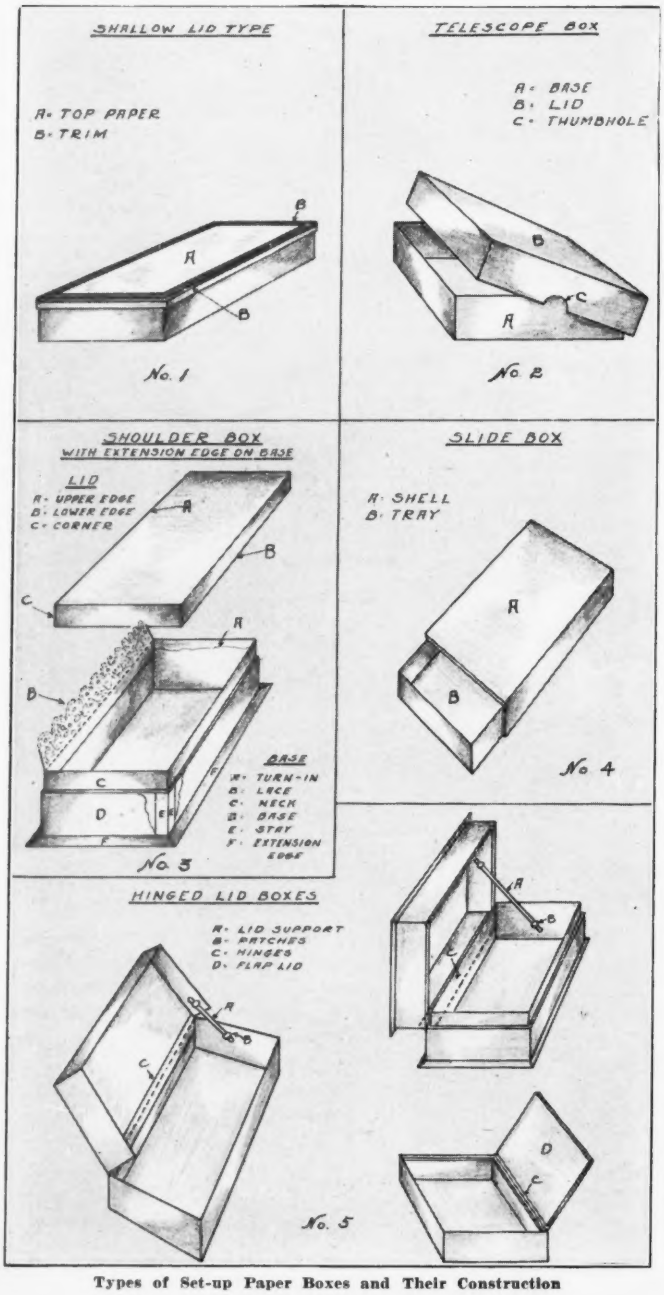
The supplying of paper boxes is largely a service. The best results and the most economical, all things considered, are obtained by close cooperation between the buyer and the paper box manufacturer. The constant interchange of ideas is necessary to a proper harmony of ideals and understanding.

A PROPERLY prepared box is of great assistance in the sale of any product. It is one of the least expensive and at the same time one of the most permanent and direct forms of advertising. An attractive package or paper box from which a consumer uses the product is a daily advertisement of that product. Such advertisements in thousands of homes are highly important. When a container can be used for other purposes after it has been emptied, it becomes an effective advertisement of the company's products for months and years. Numerous manufacturers are beginning to realize the value of this medium and to select carefully the containers for their products.

Making Sampling Effective and Attractive



Types of Set-up Paper Boxes and Their Construction

That satisfactory containers can be chosen by tests has been proven by actual results. The manufacturers of Wheatsworth crackers in 1922 were of the opinion that the containers in which their product was packed had little sales value. Accordingly they had sample containers prepared and had them tested in order to select the one which had the greatest sales value. The results indicated that one type of package predominated. This container was selected for their product. The sales of Wheatsworth crackers have increased materially since then and much of the credit for this increase has been accorded to the new package. Other companies have discarded their old packages and have had new ones prepared and tested. These companies have found that not only do the new packages appear more attractive on the retailers' shelves, but also that the retailers place them frequently in windows and give them preferred positions on their shelves.

A container with sales value must have the same features as a good advertisement. It must be noticed, remembered, and the text on the box must be read, believed and acted upon. In addition to these general points relative to a good advertisement there are other factors which contribute to the sales value of a container. They are size, shape, convenience and appropriateness.

THE size of the box depends upon the commodity which it is to contain. It is important, however, to determine the most economical unit in which to distribute any product. The shape is determined generally by the convenience in handling it and by the nature of the product to be placed in the package. The shape may be an important attention securing or identifying factor. The convenience of a box when the consumers keep the product in it is of much significance. The design and text matter are also of value as advertising material. It is necessary to test these elements for color, text and layout. The test for layout is a test of the attention value and the general appropriateness of the label.

Before actual tests are made of containers, sample boxes must be prepared. Tests do not insure the production of the best possible packages; they do insure, however, the selection of the best package from the group of samples prepared. It is necessary, therefore, to prepare carefully samples to be tested. No attempt should be made to prepare containers until all the information that can possibly be secured regarding desirable ones is gathered. Information concerning the convenience and appropriateness of the various

types of containers may be obtained by interviewing manufacturers who fill the cartons and also by submitting a questionnaire to the persons who purchase the product in paper boxes. From the facts thus secured, 6 to 15 complete sample boxes should be prepared.

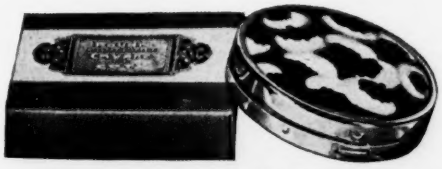
Actual tests with these boxes should be made for size, shape, convenience, and labels. The boxes should be segregated into groups of five or six, to be tested. This precaution should be taken to insure valid reactions from the persons with whom the tests are made. The tests should be made with 50 to 150 persons who are buyers and users of the product to be packed in the boxes, in order to insure conclusive results.

Tests may be made in retail stores in which the products are sold or by an investigator in the homes of consumers. The tests should be explained briefly. If the sample boxes vary in size, a size test should be made. A second test should be made for shape. If the paper boxes are constructed differently, a similar test for convenience should be made. The tests for the most satisfactory layout of text and design are practically the same as the tests for the best type of an advertisement. The paper boxes should first be tested with reference to general layout or attention value. Then they should

Octagonal Face Powder Box

be tested with reference to the best color scheme, and finally, with reference to the text or printing which appears on the label. These three tests should be combined to give a composite evaluation of the exterior of each box.

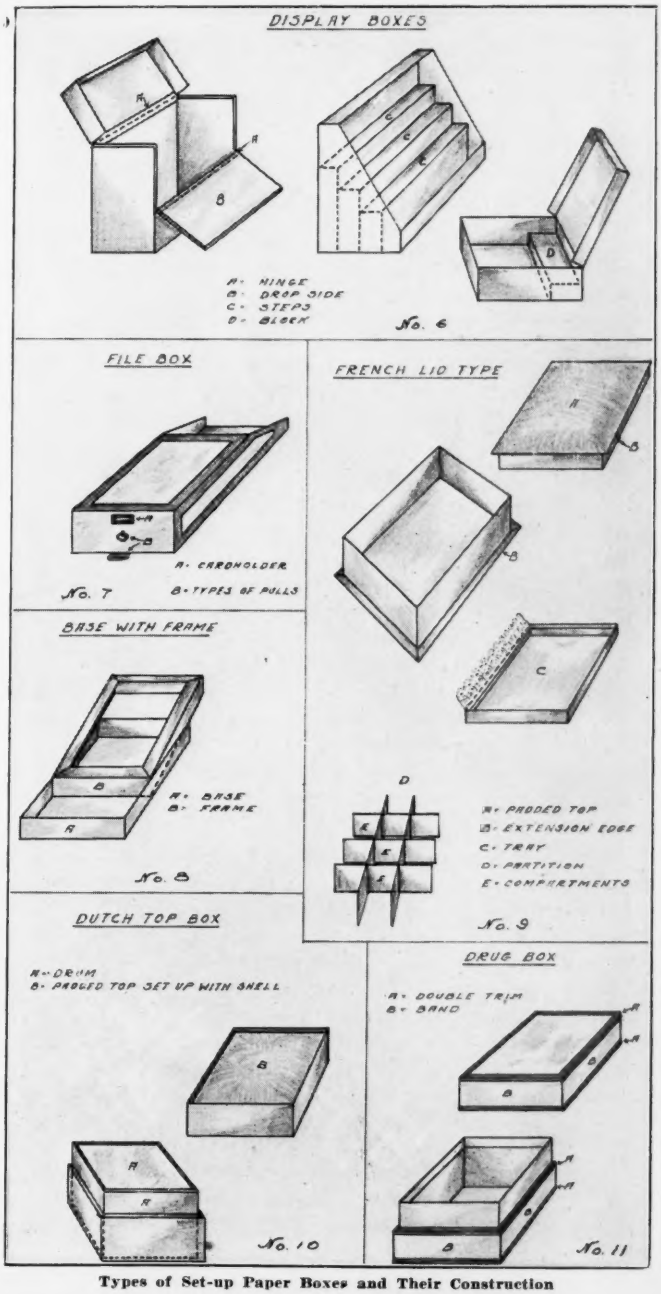
The results of the tests for size, shape, convenience, and label indicate the best box in the group of samples tested for the specific product.



Attractive Boxes for Toilet Preparations

Such a scientific study of the proper type of paper boxes to be used should assist the paper box manufacturer to serve his customers, and should aid the manufacturer who uses the boxes to sell his products. The cost of making such scientific tests is trifling compared to their value and use in securing the most suitable and attractive boxes.

Interior of Walking-shoe Box, Showing Partition



Types of Set-up Paper Boxes and Their Construction

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The Tin Container in Packaging

By H. E. DYGERT

LIKE most inventions, canning, as a method of preserving foods, was born of necessity. None other than Napoleon Bonaparte is held responsible for the origin of this great industry when, over one hundred years ago, he offered prizes to the scientists who would invent a method for preserving foods for the use of his armies. The efforts of the French scientist, Nicolas Appeart, were finally successful and the principles developed by him at that time still form the basis of the canning industry, although in late years great improvements have been effected.

Progress in the science of chemistry and bacteriology, advancement in the methods of manufacturing cans economically and modern developments in the art of lithographing tin plate have all contributed to bring the tin container into its own.

Gone are the old prejudices against eating food from cans. And what food product can you think of nowadays that is not available in cans? Milk, fruits, vegetables, fish, meat, olive oil and so on *ad infinitum*. For hundreds of products other than foods, tin containers have been adopted as standard because of the protection afforded to contents, because of their handling, shipping and wearing qualities, and because of their low cost as compared with containers made of many other materials. Here may be listed oil, grease, tobacco, talcum powder, aspirin tablets, tennis balls, shoe polish, fly spray, and hundreds of others.

THERE are two ways of looking at containers. Men concerned with packaging ordinarily think of them largely in terms of behavior. Those concerned with selling usually think of containers in terms of sales value—they put the merchandising function of their package first. To the latter view may be traced the origin of the dual-purpose package and the gift package.

Again, tin plate is summoned to the rescue for experience has found it one of the most useful and practical materials for containers of novel and unusual shape or design. It can be worked into countless forms. It can be embossed. It can be lithographed in almost any colors required. Tin plate will take a variety of finishes and will stand up under hard wear.

Mr. Sales Manager finds that some item is falling off in sales; how to bring it back? Or he has some new product to be put on the market; how to introduce it? Why not pack it in a container that, after the contents have been used, will serve a definite need in the home, he asks himself—and the dual-purpose package is born.

Much has been accomplished along these lines in recent years. The tea, coffee and sugar canisters, in which the Iten Biscuit Co. sells crackers, are good examples. The children's lunch box used by the National Biscuit Co. is another excellent illustration of the effective use of the dual-purpose package. Here too, may be listed lithographed tin waste baskets used for packing candy, coffee, etc.; bread boxes and cake boxes used for biscuits, crackers, and other products; tin pails, wash boilers, and a great many others, not excluding the homely garbage can that certain mail order houses are successfully using for selling bulk coffee to the rural trade. Although these illustrations cover widely diversified items, the dual-purpose package has not yet reached the limit of its possibilities.

ANNUALLY in the United States, probably eighty to one hundred million people give and receive Christmas presents. A smaller number give and receive birthday gifts, Easter remembrances, Valentine gifts, wedding and anniversary presents. Bon-voyage gifts to those going on a journey! A gift to the hostess when you are invited out to dinner! A gift for the new-born baby! Gifts as prizes for bridge parties! And woe to the travelling man who does not bring his wife and kiddies some sort of gifts when he comes home for the infrequent week-end!

Some historian might well name this "The Gift Age". But what a vast potential market is created for the manufacturer who can fit his product to this condition and who does not believe that "say it with flowers" absolutely precludes the possibility of saying something also with candy, curling irons, fruit cake, golf balls, cigarettes and with what-have-you.

Getting a product into the gift class has repeatedly been accomplished effectively through the use of artistically designed and lithographed tin boxes such as can be used, when empty, for utility purposes. Human beings generally seem to have a mania for boxes. Take a peek into any modern home and you will find boxes for sewing materials, for gloves, handkerchiefs, playing cards, nails and carpet tacks, boxes for this and that—anything that the family wishes to pack away or to keep in a definite place.

The use of containers that appeal to this box-loving instinct or characteristic of the human race is not untried. Probably the confectionery manufacturers use the idea more generally and successfully than any other industry. Gift boxes may be found in the lines of many of the leading candy manufacturers as well as in many of the smaller ones. Stephen F. Whitman & Sons, Inc., has its well-known "Salmagundi" package. "It's a trinket chest of metal designed by a famous artist and fit to contain the finest candies made," reads the advertising.

Another industry that is profiting generously through the use of gift boxes is the baking industry, which has used them extensively for fruit cake, assortments of fancy biscuits and other bakery products. It has been said that the tremendous increase in fruit cake sales within the past decade is traceable directly to the packaging of fruit cake in artistic lithographed tin boxes. Fruit cake as a holiday gift is now generally considered quite as much in order as candy or cigars. Probably more than 50 per cent of all fruit cake produced in the United States, which runs into many thousands of tons annually, is purchased for gift purposes.

Gift boxes of a similar character have been used also by manufacturers of many other products. Swift & Co., Armour & Co., and Wilson & Co. have utilized them successfully for assortments of soap, the Fitzgerald Co. for curling irons; tobacco companies for cigarettes, the Beech-Nut Packing Co. for an assortment of its food products, chewing gum and confectionery.

There seems to be practically no limit to the application of the gift package idea in effectively increasing the market for a wide variety of commodities, whether they be in the class of necessities or luxuries. Every year will doubtless see more and more ingenious sales executive devising ways and means of getting their products into the gift class. And those who are successful will increase the profits made by their companies.

IT can be truthfully said that anything that needs a container can be put into a tin can, but the difficulty very often found is that the product may not be able to stand the cost of a container. The result is that many producers turn from the use of tin to other materials, which is not as expensive, and, in their opinion, serves the purpose. Except in the industries, where, through experience certain standards have been established, the type of containers used depends entirely on what the producer thinks necessary. It may be a can with both ends double-seamed on; it may be a friction or screw top and perhaps with some sort of nozzle or spout, and this can be kept on almost indefinitely if it were intended to enumerate the multitude of cans used in a particular industry. In each industry, because of necessity, where any considerable volume is to be packed, mechanical genius has developed particular equipment that will handle and accommodate the requirements of that particular trade. The coffee roasters, in particular, have at their disposal very complete weighing and filling units, which greatly simplify their problem of weighing and filling their cans, likewise the tea packers, spice grinders and other industries. Each industry has its particular requirements, and to fill these requirements suitable can manufacturing equipment has been invented.

Experience has taught the value of the tin can because of its strength and protection. A metal container is able to withstand the usual transportation usage and still not add any appreciable weight that will eat up freight charges. But in addition to strength and protection, the metal container offers two more important advantages; that is, its economy in handling, inasmuch as it eliminates, to a great extent, the spoilage which usually attends other materials, but its greatest value is in its ability to lithograph customer's trade-mark or label identification. This is of great assistance because the label can never be destroyed and always presents a bright appearance and it remains an advertisement for the producer so long as it remains unopened and even after that. Few buyers realize the importance of advertising secured through lithography, but gradually the true value is being realized more and more and can buyers are specifying their requirements for lithographed tin cans. Possibly this one feature alone is more than equal to the slight increase in cost necessary to pay for the tin can over other materials. But buyers should exercise certain care in the matter of buying lithography. Lithography in itself is an art and science, and they should be careful to have their ideas capably interpreted by experienced artists and then have a reproduction to metal made by a company whose experience has proved their ability to properly reproduce label combinations. Like everything else there is a big difference in production of tin cans, in so far as quality is concerned, and like many other things, some people are inclined to consider it only from a price angle rather than a quality viewpoint. Half of a buyer's can requirements is the company behind the production of his containers, meaning the earnestness and care with which they apply themselves to the execution of all orders and that intangible something, which may be much or little, called service. It is, at times, very satisfying to know that even though the containers themselves are satisfactory, there is someone in an organization whom they are sure can be of some assistance in helping them plan their package.

Glass Containers

By JOHN T. OGDEN
Editor of the Glass Packer

THE number of styles, types and varieties of glass containers is so extensive that merely to classify them would be a big undertaking. And when completed, the work would be of little assistance to any one needing help in selecting the best type of container for his product.

This is because glass containers are constructed to meet the requirements of the service for which they are intended, and that being the case, the manufacturer seeking all that is best in glass packaging has only one sure rule to follow: Stop Seeking! Don't try to select your own container. Instead, devote your energy to picking out a really reliable container manufacturer and let him to the selecting for you. Or take your problem to the Glass Container Association, located in New York City. Knowing the nature of your product, the kind of treatment it receives in the manufacturing process, its transportation hazards, and its sales values, the Association will advise in your selection and direct you to sources from among which you may make your choice.

It is estimated that there are some 300 glass container manufacturers in this country. A few of them make almost every type of jar or bottle conceivable. Others are more specialized in their lines, confining their output to definite products such as preserve ware, perfume, narrow neck bottles, etc.

One commonly used but arbitrary classification of containers is as follows:—

Milk	Preserve Ware
Narrow Neck	Non-Pressure Ware
Wide Mouth	Medicinal
Pressed Ware	General Purpose

It is easy to see that these divisions are according to the purpose for which the container is to be used. And it is true that through years of research, a glass package has been worked out that will handle almost any product one can conceive.

TAKE milk as an example. It is a perfect illustration of how the modern glass container is "tailored" to

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fit the conditions of service. First there is the production department. The standard milk bottle is made to a definite height that will be accommodated to any filling, washing or other type of equipment. Then there is the cap (paper or metal)—the diameter of the opening has been standardized with the size of the cap. In practical usage, milk bottles are handled none to gently. Consequently, the lip of the milk bottle has been given the most careful study and is now strong enough for every condition of service. The delivery system, too, presents its peculiar problem. The milkman makes his rounds in the "wee small hours", too dark to distinguish objects. In order to help him single out his own company's empty bottles for collection, distinctive ridges, designs and patterns have been worked into the sides of the bottle so that he can single out his own bottles by a mere touch.

No matter what the conditions of service, a glass container has been developed for it. Glass can be handled in processing or sterilization as easily and as safely as metal containers, to resist a heat far in excess of that which the contents will endure. Or, if it's a perfume, whose delicacy would be impaired by the slightest evaporation, ground glass stoppers and, if necessary, suitable sealing media, have been worked out to provide the right kind of package.

Colored glass is frequently used for some products such as chemicals, drugs, etc., which are thought to be supersensitive to light. Amber is the color frequently selected for this purpose. Sometimes color can be employed effectively for its effect on the appearance of the contents. Or again, color may be valuable for its sheer beauty, and many strikingly handsome effects may be produced by coloring the container. The most commonly used colors are blue, shades of amber, green and opal, although this merely suggests and by no means exhausts the range available.

Another section of the PACKAGING CATALOG contains a detailed discussion of closures. The closure of a container is inextricably wedded to the package itself. One will always be safe, however, if he selects his container first and his seal afterwards; for practically every container can be made to accommodate every suitable style of closure on the market. To do this the container manufacturer selects the proper "neck molds" which will give the necessary finish to the top of the jar so as to fit the cap selected. There are very definite standards of measurement for these glass finishes and these are strictly adhered to.

Of shapes, there are many, of course. In addition to the more familiar rounds, squares, oblongs, and oval shapes, plain, pebbled or paneled, which are more or less standards of the trade, there are such exotic creations as the perfume bottle, designed by the most skillful craftsmen in the trade and the bottles themselves frequently made by hand.

When price is no object, there can be no objection to indulging ones imagination in the direction of design to whatever lengths desired. For ordinary commercial purposes, however, one is well advised who sticks to a standard article, which is cheap because it is made in huge quantities. The trend in industry is wholly in the direction of simplification and standardization, and the several movements already under way undoubtedly will result in comparatively few sizes and shapes being used for each product in the course of the next few years.

Closures

By A. J. STERLING

FROM the earliest days of mankind the problem of sealing all classes of containers has been a vexatious question. The primitive urns, crocks and other vessels were sealed with covers of pottery, wood, skin and other crude methods, often topped with waxes of various kinds.

The first great advancement came with the discovery of cork, and this rapidly became universal in use. It served its prime purpose well and kept the contents of the container from leaking. Of course, glass became the first container with which the manufacturer had to contend and later on tin cans brought him further problems.

Glass, with its sanitary qualities, transparency and pleasing effects, took its natural leadership in a great many lines, but probably even today only about 30 per cent of those products which could be glass-packed are shipped in glass. This is due to the fact that up to the present time the glass container, plus the seal, plus the label, has not been considered as integral a whole as the tin can.

An ordinary cork, when pushed all the way into the neck of a glass container, needs a corkscrew to get it out, and this often destroys its effectiveness as a reseal. Although corks form a very tight seal, they are hardly ever absolutely air-tight. Space forbids going into details about corks or all the other seals that have since been discovered, most of which are now in use. Suffice it to say that it behooves us all to carefully study, test and compare the seals and methods before adopting any, remembering that cork, metal, lacquer, liners, glassware and material to be sealed must all be taken into consideration.

How few users know that a screw cap may be applied with a downward pressure like a crown cap? How many manufacturers know that even screw caps vary as to pitch and application? Hence, we present the following list of closures, which probably are the most prominent:

Single Seal Closures

Crown	Various types. Used in the soda water industry.
American Can	An aluminum cap with two ears for tear-off purposes.
Hazel-Atlas	Aluminum and tin. A vacuum cap.
Goldy	Generally used in the catsup industry and has tear-off feature.
Anchor	A vacuum cap used in food industry for wide-mouth ware.
Band cap	A cap used in the food industry and applied by crimping.
White	A vacuum cap.

Re-Seal Closures

(Closures that can prevent contents from spilling when held in any position)

Roll on	An aluminum screw cap, whose threads are formed on the container.
Williams	A cap sealed under downward pressure.
C T	Aluminum, bakelite, tin, glass, brass or zinc. This is the regular screw cap.
Duplex	A quarter-turn cap, sealed under downward pressure.
Amerseal	One- and two-piece. A quarter-turn cap sealed by means of interrupted thread.
Upress-it	Sealed by means of side pressure and opened by means of downward pressure.

Sterling ..... A cap for narrow- or wide-mouth ware, sealed under pressure or vacuum.
Owens ..... Snap on. A friction cap.
Closure service ..... A band cap.
Corks ..... Rubber, natural, glass and cork, round glass stopper, paper discs.
Brass cap with lugs ..... These are either friction or quarter-turned caps.
American Can and similar types using interrupted threads.

Miscellaneous

Viscose ..... These are cellulose or gelatine caps, usually put over another closure to insure no tampering and give extra air-tight property.
Gel cap ..... Same idea as Viscose.
Tin foil hoods ..... These are commonly used on alcoholic products.
Sprinkler tops ..... With or without spun-on features and allowing use by means of shaking.

Single and Re-Seal Closures

(Used on tin containers only)

One-draw slip cover ..... Various types such as coffee cans, etc.
Barroll spout and cap ..... These are interior screw closures with non-drip spout effect.
Lock-Tite slip cover ..... These are a particular type, insuring absolutely tight seal.
Friction top ..... With or without inner seal. These are the ordinary pushed-in friction cover.
Newman ..... With or without inner seal. These are generally used on varnishes, olive oil, etc., and are spun on.
Tite-N-Rite ..... With or without inner seal. These have a hinged cover which can be used after opening as a reseal.
One-piece single seal ..... Reamed-on or clamped-on seal.
Various adaptations of the C T cap with anti-refill or theft features.

These classifications are of necessity brief—nor do we wish to do more than to impart the information that manufacturers of products are more and more becoming convinced that a container is not merely the glass bottle or the tin can or the shape or design of either, but—a container means the vessel, plus the closure.

These two elements, properly selected, form the container, and together they enter into the successful sale and marketing of the product.

Paper Liners for Caps

ONE of the most important adjuncts to the glass packer is the round disc of liner paper that fits snugly between cap or cover and the edges of the jar. It is hidden from view and is scarcely ever thought of once the lid is put on. But when one stops to realize that the problem of making an air-tight seal in glass jars depends entirely on the liner, not the cap or the jar, and that the foods must not be contaminated and the seal must hold between a tin cover and the edges of the jar, which are often rough, then the matter of preparing liners becomes more important.

The ideal liner seems to be ordinary paper treated with waterproofing and air proof compounds which are insoluble in food products or mild alkalies. Many special processes are required to turn out the liner paper for caps.

Specially tested oils such as linseed, chinawood and perilla, low in acid content, are used in the coating of the paper liners. Care must be taken to prevent acidity in the varnish with its resultant odor. After the varnish is boiled it is cut with solvents to facilitate coating on papers. A form of tough lacquer is used on the papers to be utilized in making vacuum caps similar to the linseed or chinawood oil varnish. The varnishes or lacquers are then coated on heavy close papers, such as kraft, express or rope, uncoated or filled to absorb the varnish. Some papers are run through machines which coat them on one side for working up into duplex board or pulp board.

ONE of the most discussed features of making varnished paper is its moisture absorption. Careful oxidation is necessary to make the paper air- and moisture-absorption-proof. After the paper is coated and hung up to allow the film to spread over the surface in a uniform coat, it is inspected for imperfections and wound on rolls for shipping. Sometimes it is cut into sheets 36 or 40 in. on a side for manufacturers to cut up for their machines.

The manufacture of paper varnished on one side and waxed on the other, for making tight seals along rough edges and in cold packing, involves a similar careful treatment. The wax is flowed on the paper at a temperature of 260 deg. F. to insure uniform coating and is carefully inspected for defects. This paper has unusual qualities, as the additional heat practically eliminates any remaining odor and with the harder air tight varnish coat on one side and the softer pliable wax coating on the other side, it makes one of the most effective seals yet developed for glass jars. This type is the most resistent of all types from the effects of moisture. When the paper is completely treated it is stuck to rolls of pulpboard then slit to proper width for inserting in liner cutting machines. The white waxed pulpboard and lined waxed pulpboard form another important branch of the liner manufacturing business, as they are used in the caps of cold cream and candy jars for sealing against moisture. The third form of liner is the black oiled paper, which is alkali resisting and is used in milk of magnesia bottles.

Box Top Padding

PAPER box manufacturers have found certain savings in the use of Kimpak box top padding. This new box top padding is snow white, extremely soft and resembles somewhat shredded crepe paper. It is surprisingly light in weight for its bulk, and because of these features gives an excellent result in the finished product. The following claims of superiority for the product are made by the manufacturer: uniformity of thickness, resilience, ease of handling and cutting, perfect flatness of sheets, and no waste of material.

Among the economies which have been pointed out by companies who have used this padding are the following: due to the paper backing and the flatness and uniformity of sheets, Kimpak padding can be readily jogged in a cutter, while most padding has to be laid out separately, each sheet at a time; the paper backing eliminates the need of placing a padding and a manila sheet on separately when they are applied at the wrapping machine. There is also the saving in the cost of the material itself.

Kimpak box top padding is furnished in two thicknesses, 7-ply and 10-ply of 24 in. by 36 in. size. The sheets are delivered in sealed corrugated cartons containing, respectively, 175 sheets and 125 sheets for the 7-ply and the 10-ply.

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Glass Package Labels

By H. J. CARR

THE use of glass containers in the packaging of food products in many ways simplifies the problem of label design. At the same time, if glass package labels are to be most effective, it is necessary that a consideration be given to a number of factors which are encountered with glass but not with other types of containers.

Perhaps the most important problem which the glass container solves, is that of presenting the appetite appeal of the product. In strong contrast to containers whose labels must whet and stimulate the appetite, the glass container, because of its transparency, permits the color, size and quality of the product itself to make the appeal to the consumer's appetite.

We are all familiar with the colorful illustrations of raw fruits and vegetables seen on many packages. Recently many labels have been changed in this respect, and we now see pictures of the prepared rather than the raw product. Frequently, in order to portray the product, the use of several colors is required, and of course the more colors used the greater the label cost will be. In any event, a satisfactory illustration is difficult to obtain, and no matter how perfect it is when obtained, it cannot present the product's real appeal to the appetite as the product itself does when seen through glass. In this respect then, the use of glass not only eliminates one of the most difficult problems in label design, but at the same time materially reduces the label cost.

Another point in favor of glass is that it is associated in the minds of consumers with quality products. Generally, with other types of containers, it is necessary that the label in some way convey to the consumer the idea that the product is of high quality. While good results along this line have been obtained, it is easy to see why the consumer may be more impressed with products packed in glass. Glass, from its earliest commercial use, has been associated with cleanliness and sanitation.

ANOTHER way in which glass simplifies the problem of label design is in the matter of appropriateness. Usually one of the functions of the label is to make the container seem well suited to the product, though in fact the container itself may be one which is used for products of widely varied natures. Since glass can be moulded or blown into many shapes and sizes, it is possible to design and produce a container especially suited to a product that will in time identify the contents. Some of the containers which are firmly established in the public mind as suitable and convenient for the products with which they are used, are catsup and chili sauce bottles, preserve, pickle and mayonnaise jars and jelly and peanut butter tumblers. Other examples could be mentioned and it is true that as time goes on more and more glass containers will become associated with the products with which they are used because of their evident appropriateness of design.

In the design of labels used for glass food containers, the first question to be considered is that of size. With most opaque containers a label as large as the package itself must be used. Obviously so large a label would not be required with a glass container nor would it be desirable since in choosing glass as a container for food products one of the main objectives is to make it possible for the consumer to see what she is buying. Relatively speaking, therefore, the glass food container label should be of a small size and it should be so designed that the consumer can see the product when looking directly at the front of the package with the label in place.

Thus the question arises as to how a small label can be used to best advantage. There are a number of possibilities along this line which as yet have only been partly realized by packers in glass and which for emphasis can be listed and discussed. They are:

1. Legibility
2. Shape
3. Back-ground
4. Color Combinations
5. Packer's or Brand Name
6. Name of Product
7. Trade Mark
8. Poster Treatment
9. Artistic Design
10. Standardization

Legibility: While legibility is a virtue in any label, it is especially important in connection with glass packages. With the area of the label cut down, there seems nevertheless to be a natural tendency to crowd in much of the reading matter which is customarily used with labels on other types of containers. To do this with glass becomes not only unnecessary but highly undesirable because it detracts from the legibility of the label. A simple layout with the fewest possible words printed in attractive type and arranged in a dignified and impressive manner, will insure legibility in glass package labels. And because the label can be easily read, the consumer's attention will be drawn to the product and the label will have performed one of its most important duties.

Shape: Since nearly all glass package labels are cut-outs, it is both practical and possible to make the shape of the label one of its important characteristics—a mark of identification which the consumer will recognize even before she sees the brand name or the name of the product. To a certain extent this possibility has been recognized and used. Anyone will immediately recognize the Heinz keystone-shaped label, but for the most part, however, oval or round labels are still used. Other possibilities in this respect are squares, oblongs, diamonds, pentagonals, hexagonals, octagonals, stars, crescents and any number of fanciful shapes which the packer may choose and by continued use make one of the important features of his label design—one which will help the consumer identify his products.

Background: Regardless of shape, a background arrangement can be used which will also serve to identify the packer's product. We are all familiar with the Libby pyramid occupying the lower portion of each label. This background arrangement identifies Libby products even without the use of words or illustrations.

Color Combinations: The use of color or combinations of color, also helps the consumer to identify the packer's products. When we think of certain combinations such as red, green and gold; blue, white and red; orange and blue, we think almost instantly of certain well-known packers who use the combinations mentioned. It is true, of course, that many color combinations are already in use. The point is, however, that even though the adop-

tion of a certain color combination may mean the duplication of one now in use, it is nevertheless advisable, since to each consumer the color combination will represent the packer with whose products she is most familiar.

It is, of course, to be understood that the features which we are taking up individually should be used in combination and thus it follows that even though two packers use the same combination of colors, the fact that they use different shaped labels and different background arrangements, will prevent confusion, and in each case the color combination used will serve as a mark of identification, though to one consumer it will mean one packer and to another, another.

Packer's or Brand Name: Since in specifying to the retail clerk the package which she desires, the consumer must use the packer's or brand name; the label should be so designed that this feature stands out prominently. Some packers feature the brand name, others the packer's name, and still others a combination of both. However this feature is handled, the name which the consumer is expected to use in specifying the packer's product should be given special emphasis. Emphasis can be secured in a number of ways. The use of a distinctive type of lettering is perhaps the most common. In most cases this is effective, but care should be exercised to see that the lettering is not so eccentric that it cannot be easily read. Other methods of securing emphasis are through the use of specially large types, placing the packer's or brand name in a dark colored ink against a plain white or light colored background, or through the use of reverse lettering whereby the words stand out in white or a light color against a dark colored background.

Name of the Product: Second in importance to the packer's or brand name is the name of the product. This also the consumer must use in specifying to the retail clerk the package which she desires. Here a plain type is preferable to a fancy one and it is more practical also because many labels are so designed that the name of the product can be changed without in any way affecting the balance of the label. Unless the product is a decided specialty, the use of a simple descriptive name for the product is best. Fanciful names for products emphasize to the consumer the fact that she is not familiar with them and it is true of course that people hesitate to buy products with which they are not accustomed. Whether the name be fanciful or plain, however, it should be easily read for this will help the consumer to specify the package she desires.

Trade Mark: The properly designed glass package label should provide for the prominent display of the packer's trade mark. Many trade marks are quite complicated in design and therefore hard to distinguish when printed in small size. The trade mark should be considered of equal importance with the two other essential things to be displayed on glass package labels, namely the packer's or brand name and the name of the product. Frequently the trade mark gets the prominence it deserves by placing it at the top of an oval or oblong label, sometimes by a cutout arrangement which makes the trade mark stand out above the label proper. Then again with round or hexagonal labels, it is possible to make the trade mark a center piece with the packer's or brand name above and the name of the product below.

Poster Treatment: An essential of an effective label is that it can be identified at a distance. Frequently it will be noted that while a label appears attractive enough nearby, at a distance it possesses no outstanding features. The two essential copy features of any label are: (1) the packer's or brand name, and (2) the name of the product. These should be so outstanding that when the package is viewed from a distance they are legible even though none of the other copy on the label can be read. A visit to any grocery store will show in a most convincing manner why poster technique in label design is essential. Few people can read small type at a distance or even a few feet, and thus if the consumer cannot read the name of the packer and the name of the product as the package stands on the dealer's shelf, or as it is displayed in his windows, there is small chance that she will specify the packer's or brand name when she buys and that, of course, is contrary to the result which should be accomplished by correct label design.

Artistic Design: The artistic arrangements of the materials which compose the label is an important factor in securing and holding attention. Shape, background, color combinations, trade marks, type and borders, all require careful thought if a pleasing combination is to be secured that will constitute a single field of interest. In an effort to secure an artistic effect then, it is well to keep in mind that any designs, letterings, colors or color combinations which consciously or unconsciously would "grate" upon the consumer's attention should be avoided.

Standardization: One of the most important points to be observed in correct label design, is standardization on each of the foregoing features. Each label should, regardless of its size, the size of the container, or the product, conform to the standard shape, the standard background arrangement, the standard color combination, the standard emphasis of the trade mark, and the standard poster treatment which gives extra prominence to the packer's or brand name and the name of the product.

THE second problem presented by glass package labels is that covering instructions as to how the product should be used or suggestions as to the variety of ways in which the product may be used. Obviously, instructions or suggestions of this nature cannot be carried by the package label itself, for that must be kept simple in every respect and used almost exclusively as a mark of identification to aid the consumer in selecting the packer's product. There are two methods, however, which may be used to overcome the limitation of the package label proper in this respect. The first is the use of a second label and the second the use of lithographed caps or closures.

If a second label is used it should conform to the package label insofar as the color combination used is concerned. Otherwise it should be as plain and practical as possible. In most cases an upright oblong label placed on the back of the container will best serve the purpose. The instructions for use should be made as simple and clear as possible, for it must be remembered that the consumer in buying package merchandise is buying for immediate use and trying to avoid as much as she can the work involved in the home preparation of food.

Likewise, if the second label is used to suggest new ways in which the product may be used, it is desirable to hold to those uses which are quick and convenient rather than to list others which, while good, are complicated.

LITHOGRAPHED caps or closures can be used for the same purposes as the second label and packers are beginning to see the desirability of this practice. In the first place, the lithographed cap lends distinction to his package and at the same time eliminates the cost of extra labels and likewise the cost of applying them. However, regardless of whether use instructions or sug-

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gestions are considered necessary and desirable, the lithographed cap or closure is coming more and more to represent the highest development of the glass packing art.

In the case of lithographed caps, it is possible to carry standardization even further than in the case of labels. It is generally found desirable to adopt a uniform design and color combination for all caps, for when this is done the cap can be used with any product and thus it is unnecessary to stock a large number of caps with a variety of lithographed designs to match each product packed. The same predominant color should be used on the caps as is used on the labels. However, it is frequently possible to produce lithographed caps which will harmonize perfectly with labels without using as many colors as are found on the labels.

While in each of the foregoing points the consumer has been kept in mind, still this point requires further emphasis. The choice of glass as a container, the use of a good label, and of an attractive cap, are all features which the consumer appreciates, but the important feature from a selling standpoint is the final results achieved by these three factors in combination. Is the final result a distinctive package or is it just another package to be placed on the retailer's shelf? Does the package represent the skill and care the packer has put into the preparation of his product and does it emphasize its quality?

THE consumer is bound to judge a product by the company it keeps. If, therefore, it is a good product, the package should look the part and in order to do this care must be exercised to provide a container, a label and a cap which are in complete harmony. Some packers may say, "But my product is good and what difference really do these things make". The answer to this is that people prefer the better things—they judge values by what they see and they have learned from experience that the attractive package generally contains a fine product.

When the consumer sees an attractive package she is impressed and experience tells her that the manufacturer who presents his products attractively is likewise the one who exercises care in the selection of quality ingredients and in the preparation of his products. Is it not logical, therefore, to exercise care in what might be termed the "dress" of your packages?

When you send your packages out to the dealers' shelves you are sending the consumer the tangible evidence of your ability as a packer. She judges that the package you offer will be a true indication of your ability as a packer, and of the quality of the products which you produce. Under these circumstances, does not the selection of your containers, the design of your labels, and the "dress" of your packages take on a new importance?

Labels for Round Cans

MOST of the trouble which is met in labeling can be attributed to the use of labels which are off size, improperly trimmed or printed, crossgrain or incompletely dried. The following suggestions will be found helpful and will save time in the mechanical application of the labels, making frequent readjustment of labeling machines unnecessary.

To determine the correct length of a label, add 3/4 in. to the distance around the body of the can. It is generally known that wet paste on tin is likely to cause rust so that it is desirable to keep all paste between the two thicknesses of paper. For this and other reasons, experience has shown the inadvisability of using short labels, and in the interest of standardization the general adoption of the above rule is highly desirable for any size round, hermetically sealed, friction lid, screw top or slip cover cans.

To determine the proper width deduct 1/16 in. from the distance between the can flanges. It is impracticable to calculate on labels fitting snug between the flanges, particularly on double seamed cans, because the distance between the flanges varies according to the adjustment of the individual closing machines. A full width label on a slightly narrow body will run up on the flange and fail to make a neat appearance. The slight clearance provided by adopting the above rule assures more uniformity in matching the laps of labels under varying conditions. On slip cover cans, the correct width is determined by deducting 7/32 in. from the distance between the inside of bottom flange and the top edge of the lid.

The following are dimensions for standard size labels for double seamed cans of the sizes shown:

CAN SIZE	TYPE	SIZE OF LABEL
2 1/16 in. x 4 in.	No. 1	3 1/16 in. x 8 1/16 in.
3 in. x 4 1/16 in.	No. 1 tall	4 3/8 in. x 10 7/16 in.
3 3/8 in. x 4 7/16 in.	No. 2	4 1/4 in. x 11 1/16 in.
4 in. x 4 1/16 in.	No. 2 1/2	4 3/8 in. x 13 1/16 in.
4 1/4 in. x 4 7/8 in.	No. 3	4 5/16 in. x 13 1/16 in.

PARTICULAR care should be used in trimming labels to avoid tapering; i. e., the packs being wider at the bottom than at the top. Each pack should also be trimmed uniform in width; i. e., not wider at one end than at the other as it is impossible under such conditions to match the laps at both top and bottom.

It is well to have the laps meet in some sort of a circle style effect rather than in a straight line because of the difficulty of trimming absolutely parallel to the border. A slight irregularity of matching at the border is not recognized with a circle effect design.

On embossed labels, arrange the design so that the embossing is distributed somewhat uniformly over the label instead of being concentrated in one spot. Don't run it closer than one inch to the plain or lap end, although it may extend to the other end if on both top and bottom border as well as in the center. When embossing is placed in the center only, the thickness of the pack is increased at that point, thus giving the pack an unevenness which renders efficient control impossible without frequent adjustments. The embossing should not be "overdone" as this causes the labels to cling together, making it difficult to separate them. If embossing dies are cut with round corners rather than square labels will separate more readily.

White laps are more effectively sealed than either inked or varnished ones because any paste adheres less thoroughly to the latter. For this reason, label designs should only extend about 1/16 in. longer than the dis-

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tance around the can body. The length of the varnished surface should also be determined in the same way. It is especially desirable on friction lid and slip-cover cans to put the lap on the left end.

For high class or embossed work, a coated litho 25 x 38, 60 lbs. to 500 sheets, makes the best label. A satisfactory label is also made from super-calendar 25 x 38, 55 lbs. to 500 sheets. Where a heavy varnished label is required, the stock must necessarily be lighter and a super-calendar of the same dimensions weighing 52 lbs. to 500 sheets is generally used.

THE grain of the paper should run lengthwise on all labels excepting on those to be pasted all over and shrunk on containers of baking powders, cereals, etc.

If the grain runs crosswise or with the width of the label it becomes tender after the lap is moistened and is more likely to tear while being stretched. Furthermore, the lap tends to curl back before the paste dries.

Too deep a register causes the labels to pucker up in the center, thus preventing the cans from getting a uniform contact at each side as well as in the center.

—Courtesy Burt Machine Co.

Collapsible Tubes

By FRANK J. LYNCH

COLLAPSIBLE tubes have been made of tin, lead and laminated metals for many years; that is, tin on the inside, next to a layer of lead, and tin on the outside. The usual procedure is to use a lead tube for cements, adhesives, certain soaps, oils; and for purposes of a cheap package, it has no competition. Not so much in this country, but in Germany is the tin-coated or laminated tube used. Our drug laws prohibit a content of more than twelve per cent lead in a package that is used for food or for certain pharmaceutical uses, and this percentage is also maintained in France.

The laminated or tin-coated tube is not used to a great extent, primarily because the scrap content is not an economic one. The scrap contains tin and lead and is not very marketable; the necessity for tin on the inside and outside, with lead in the center, makes the tubes excessively heavy, increasing the shipping cost, and the American market has been trained to standardize on tin.

While there are 24 kinds of tin, 22 of them show a variation in purity of less than one-half of one per cent. Tin, therefore, that is used in collapsible tubes can be understood to mean Straits tin of a purity of more than ninety-nine per cent. While there are other tins used of practically the same purity, there is no economy, as the best production obtainable comes from Straits tin and it is not adulterated.

USERS of tubes, under certain conditions, find occasional splits and pin holes. Where you find a pin hole, usually a purple stain is apparent, and an analysis will indicate an arsenic content. This finding is rare, however, and is inherent in the material. Under certain conditions, particularly in the summer time, tin is affected by a tin sickness and will turn out tubes of questionable quality. But this happens only rarely and is, at present, uncontrollable.

The best assurance that one is obtaining a good quality of tin is that the resultant scrap is worth within a few per cent of the cost of the new material, so that any adulteration in the tube, obviously, is in the scrap, and the separation or selection of it makes the cost prohibitive. In summary: Don't materially worry about the quality of tin in your tube, and forget the theory that there is lead in them, because there is not. I have taken three parts of the same lot of raw material and sent them to three recognized metallurgical experts, for a complete analysis, one of which was the Bureau of Standards. The net result was a disagreement to equal more than three-tenths of one per cent. Therefore, in your analysis, don't let any one tell you they can analyze closer than this.

If you work with one house, they can give you relative results closer than three-tenths. But that doesn't mean, if they show a tin content slightly under ninety-nine, that another expert won't show slightly over, and there have been many arguments on this score.

The only other material used in tin tubes for extrusion is about five-eighths of one per cent of copper. A study of alloying has demonstrated that the elongation and the ductility of tin are improved by this introduction. And, strange as it sounds, ninety-nine per cent tin and one per cent copper has a greater elongation than one hundred per cent tin.

In later years, laboratory demands for accurate packages have caused refinement in the manufacture of collapsible tubes, so that today the quality is higher than ever before. The price is lower: a two-ounce tube in 1921 and 1922 with a tin market comparable to that of today would sell for forty-four per cent less at the present time.

THE floor space required for handling collapsible tubes is ridiculously small. Four hundred square feet provide more than enough room to handle a capacity that would warrant gross sales of over two million dollars. Rapid deliveries reduce the necessity for carrying stock, and a company whose business runs into the millions can be found with a tube inventory equivalent to two weeks' delivery. With the rapid filling possible today, the scientific treatment is to have sufficient equipment to fill only a few days a month, using the filling organization elsewhere on the production of other articles. The handling of tubes with this rapidity has made it necessary to perfect coatings and printings so that they are more resistant and less fugitive than a few years ago. The fittings of the caps, the area of the orifice and the strength of the tubes, are now subject to accurate testing. A recent test made of some tubes several years old showed a hydrostatic bursting test of less than thirty pounds as against fifty-five pounds which is considered normal today. This, you will remember, with the tremendous saving of between forty and fifty per cent in the last few years.

A COMPANY today, if using collapsible tubes and purchasing them to specifications, by test, is assured of getting a tube that can be filled at maximum speeds for machine operation, providing they will work up a set of buying standards that guarantee them a test on a

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straight-size tube of not under fifty pounds hydrostatic pressure.

A collapsible tube has only one secret, and if you will determine this, you have got it all. The wall thickness of a collapsible tube, at the shoulder, is the backbone of the article. If this is set, and you designate the opening required, the outside diameter of the cap, the minimum diameter of the tube and the length of the tube, the "Thief of Bagdad" himself would have to give you a good article.

In merchandising with collapsible tubes, the requirements have been that a customer having a trade mark, or certain style of package developed for other lines, requires the same treatment on his tubes. Tubes can be printed in four colors, and in using screen work, creditable results have been obtained with as many as eleven shades. The tubes can be protected to make them resistant to alkali and alcohol, and any printing that can be done on paper can be reproduced on tin in a surprisingly accurate manner. For large runs, a steel plate is used in which the design is hand engraved from solid steel, with a minimum of wear; the impression is very accurate and with little gradation.

In merchandising materials that go into tubes, we have the following advantages: the average public is familiar with them and knows how to handle them; they can be packed for traveling; they are sanitary, as you cannot get your finger into the material; more than one person can use a tube, whereas with other packages it is more limited. The package is eliminated and the unit cost is less with filling and handling expenses much under other containers.

The millions of dollars that are being spent by some of the larger companies pave the way for the new users, and when it is realized that there is approximately seventeen million dollars spent annually in advertising tubes in the United States, the reception of this type of package is very high. The average person considers tubes for pharmaceuticals only. In Germany a great many food stuffs are marketed in tubes, and this practice, in my opinion, will be followed in this country. They put up marmalade, butter, peanut butter, Anchovy paste, Sardelloen, cheese products, sandwich fillers, besides numerous liquid concoctions, such as heavy perfumes and many other peculiar materials that one wouldn't expect to find in such a package.

In the development of a package, a customer should have service that is broad enough to cover the following details. He should be sold containers that enable him to market his product within the range of the tin prices without serious handicap and make a profit. There have been a good many packages developed that were too large at high-priced tin, and possibly too small under other conditions of low-priced tin.

A tube can be made sturdy so that it can stand any bursting strain. This is the usual procedure but it will not fold as readily as a tube that is thinner in the wall, so that one type of tube, the thin tube, will cause one complaint under certain conditions and the heavy tube might bring just as many but of a different nature. This is a question of how the article is handled, and if a tube is made with an opening or orifice of the proper ratio to its diameter, if the length is not too long in proportion to the diameter and if the material is kept in proper conditions, there is no difficulty. Obviously, if the opening is too small, and the material hardens and excessive pressure is put on it, something happens.

The phenomenal growth of collapsible tubes best indicates that they are meeting their requirements, and each year finds several additional millions of dollars used to advertise them, to quicken the demand and to improve the quality.

Paper Bags

By N. G. GIBSON

IT is not so very long ago that any purchase made in a store was painstakingly wrapped by the storekeeper, with the resultant waste of time. Then, as life began to move more rapidly, the foreseeing retailer began in his spare time to make up by hand a small quantity of bags. From this, the next step was the machine-made article, which makes possible the quick service which we get today in the retail store. At that point, the bag remained for a long time—just a bag. People didn't realize that each bag could become a container and carry its message with it. Even today, the majority of bags used are just bags—plain kraft bags—but some manufacturers have realized how much more a bag can be. Its labor-saving qualities are a matter of history, its cheapness, its economy in weight, freight and expense are easily demonstrable. But it is still not a matter of common knowledge that it is possible to produce paper bags which, for appearance, equal the finest cans or cartons, and for usefulness in their appropriate fields cannot be surpassed. So far, the coffee trade has made most use of the possibilities of a well-printed paper bag but other trades are now finding that it is paying them to give attention to this form of package. There is a flexibility to the paper package, which it is difficult to get at competitive prices in any other form of package. At one end of the scale, there is the paper sack used to carry 94 lbs. of cement and, at the other, the small envelope holding a few "After Dinner" mints—both holding their contents perfectly.

THE trend of the consuming trade toward the smaller package—preferably the trademarked package—has been most marked in recent years, and to display goods so effectively as to secure sales, it is necessary to make the package attractive. Recent developments in the printing of paper bags, the introduction of new high speed machines by manufacturers and improvements and developments of many new papers, have enormously widened the possible use of the paper bag in retail trade. Goods can be packed by the maker, shipped securely to the retailer, and be displayed by the latter in the most effective manner in these economical paper containers. The high-grade printed paper bag will well repay investigation by manufacturers who desire to put before the public in retail stores any article to the sale of which attractiveness, freedom from possible contamination in handling and economy of packaging can contribute.

Among new developments in paper bags, the most striking are the Cellophane face bag, the tin-tie closure and the sift-proof bag. The first of these, the Cellophane-face bag, is a bag made from any desired material with a Cellophane strip down the whole length of the face, through which the contents are clearly visible. This package is primarily useful where the sight of the product will induce the buying urge and yet, where it is necessary, protect the contents from spoilage through exposure or handling. It is being largely adopted by the bakery and candy trades, and is particularly adapted for articles

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of clothing, such as shirts, ties, middy blouses, children's rompers and other similar items.

The tin-tie closure is a device whereby a bag can be securely closed, yet opened any number of times and resealed. A notable example is the case of coffee. This can be roasted and shipped out in individual bags to the store; then, at the time of sale, the coffee can be taken out, ground as desired by the customer, returned to the bag and the bag securely closed in less time than it would take the average store clerk to weigh out a pound and fill and tie an ordinary bag. The tin-tie has the added advantage that the final user may use any quantity from the bag and reseal it after each opening, thus preserving the contents until finally used. This closure is eminently adaptable to any container, the use of whose contents lasts over several occasions, and the small cost is more than repaid by the consumer satisfaction obtained.

The sift-proof package was devised to meet railroad requirements for the shipment of poisonous powders, such as insecticides. It is formed by the use of wire staples at the top and bottom and is absolutely sift-proof. Compared with previously used containers, it is a great economy and most efficient.

Along with devices cited above, there has been a great development in the strength of paper bags. Bags made from several plies of paper fear no comparison with burlap and jute, and can stand the roughest of handling. In fact, the requirements for insecticide bags demand that the filled bags must be able to stand a drop of four feet on to concrete without even sifting, and they will stand a large number of such drops. Apart from strength, the fact that several plies are used permits the use of different types of paper in the same container. Thus it is possible, for example, to construct a bag with an outside sheet of white paper for appearance, an inside sheet of kraft paper for strength and a further sheet of asphalt paper for water-proof qualities. In fact, there is available an infinite variety of combinations to meet innumerable requirements.

It is not generally known that the manufacture of paper bags has reached a state of specialization, in which the individual needs of the customer can be met. No longer must one take a standard bag and make it do. Just as a man of peculiar build can go to his tailor and have a suit made to suit his figure and from any cloth or pattern that his fancy or his needs dictate, so, too, is it possible to go to an up-to-date specialty paper bag manufacturer and say to him, "I require thus and so, —what do you recommend?" And he will produce an article which will fill the bill. Printing presses capable of printing half a million bags a day in four colors; bag machines capable of making and printing in one operation over a million bags a week; bag machines that can take five different kinds of paper and make them into one bag. And behind all that, the highly skilled chemists of the paper manufacturer give a diversity, a universality and an economy which offer a wonderful contribution to the packaging problems of today.

Fibre and Paper Cans

By C. T. SIMPSON

NEVER before in the history of business has the package played such an important part as it does today. The dressing up of merchandise is a big factor to be considered before putting any new product on the market. Fibre cans are now made in such a great variety of sizes and closures that they must be considered in the packaging of a large number of products.

All fibre spirally rolled cans are now made from one-half inch to seven and a half inches in diameter, and there is practically no limit to the height; you can have any color on the top and bottom cap to match the color of the label; you can have the can shouldered at each end so that the top and bottom cap will be flush with the bodies, and make it simple for labeling on automatic machines. Spirally wound paper cans are also made in a larger variety of walls than ever before. You can buy the chipboard can, both plain and paraffined, for the simpler forms of packing; also the chipboard can be lined with either glassine or parchment paper. Then, for the more moisture proof cans, you have the chipboard can with asphaltum for a liner. This can, with an asphaltum lined cover and shouldered so that the label fits snugly, is a very good can for keeping out moisture and will compare favorably with the better grade of tin cans. Cans made of Bedford manila are very attractive looking and durable.

There are, also, paper cans that are carried in stock for grocery stores, ice cream stores, drug stores and various other stores that sell in bulk. This type of can has made rapid strides in late years and is fast replacing wooden plate and ice cream folding packages. This type of can is usually carried by the paper jobber in the following sizes: one-quarter and one-half pint, one pint, one quart, and half gallon and gallon. They can also be had with printed tops and sides, made to order for very little extra cost.

A NEW type of can that has just appeared on the market is an aluminum-foil lined can for baking powder and is said to have proven a success. Tin-foil cans have been on the market for some time but the aluminum-foil lined can is a new thing.

There has also appeared on the market, recently, a new style of can for marshmallows. This is a spiral can, rolled with an outside ply of pure white sulphite and printed in colors after rolling. After the marshmallows are put into the can and the caps placed in each end, the completed can is given a bath of paraffine. The white sulphite board gives a beautiful, glossy surface and the can is said to keep the marshmallows in excellent condition. These last two items are the latest development in the fibre can industry.

The bird seed folding box and round spiral paper can are being replaced by one well-known bird seed concern with a square convolute, round-cornered can with a tin top and bottom, the top having a metal pouring spout. Many manufacturers of other products should utilize this idea as it is a very successful package.

The convolute fibre can is taking the place of the spiral can by users who want a good, strong can and are willing to pay more. This type of can is made in various shapes, the more popular ones being round, square with round corners, and oval. Five types of walls supply

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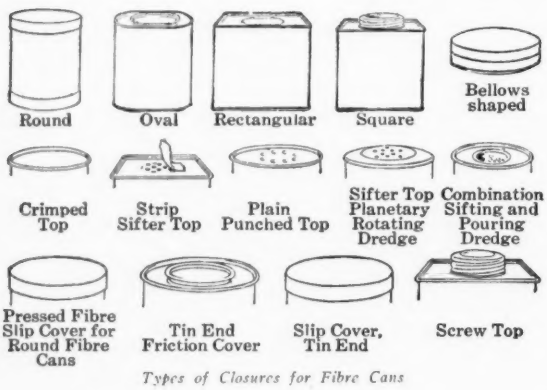
practically all the wants of users. These are as follows: (1) Plain Chip Board, (2) Imitation Bedford Manila, (3) Genuine Bedford Manila, (4) Bedford and Chip combined with Asphaltum, and (5) Glassine Lined Chip Board. There are various other kinds of material used but the bulk of the cans are made out of one of these five. The method of manufacture in the winding insures a strong, stiff can as the paper gets a good coat of glue on one side which is allowed to soak into the board for a little time before the paper reaches the winding mandrel. The can comes off the winding mandrel in a soft condition but after drying is very stiff. For packaging ordinary products that are dry, the chipboard is usually satisfactory but for oily products the convolutely rolled can of genuine Bedford or glassine lined chip is recommended.



Types of Closures for Fibre Cans

For a moisture proof can the combined chip and Bedford with asphaltum is the best. This type can be made with various closures but the round style is the only one that is used with paper ends to any extent. On the square, round-cornered can it is possible to have a large variety of tin closures, among them being the following:

PLAIN SLIP COVERS: This is just an ordinary tin cover that slips over the top of the can after the contents have been packed. The can is usually labeled to keep the cover on. The top can be plain or the user's name can be embossed on the top.

FRICTION TOP: This closure is very popular as the can is filled from the top, and the friction plug is forced into place after the filling operation. A can of this style has the advantage of coming to the user already labeled.

CRIMPED-ON TOP: This can is filled from the bottom. The can manufacturer furnishes a crimping machine to the user for the purpose of crimping on the bottom after the can has been filled.

There are also various types of sifter tops that are used very considerably. These sifter tops can be put into either a slip cover style or a crimped-on top.

For certain products nickeline tops are in demand and, although they are higher in price than tin ends, they make a more attractive appearance especially with a label of good color and design. Nickeline top cans are closed and opened by just a turn of the hand.

The paper can industry has made a great improvement in the last few years, and before any product is put on the market, the value of packing in a paper can should be very seriously considered.

Transparent Cellulose Wrappings (Cellophane)

A NEW wrapping material that manufacturers of countless products have found an effective aid in protecting their merchandise and improving its appearance known as "Cellophane," which is the registered trade mark of the Du Pont Cellophane Co. to designate its transparent cellulose sheets and films.

A description of its characteristic properties and the resultant advantages they are stated to lend to certain products on which this transparent wrapping is used are as follows:

Cellophane is 100 per cent transparent. Details of color, size, shape and texture are clearly apparent through it, just as visible as if the product were unwrapped. Its use provides complete protection from the detrimental elements packages meet in their journey from maker to consumer. It insures the article reaching the consumer in the same perfect condition it left the manufacturer. It gives the package a distinct hygenic atmosphere and guards against germs, flies and all sorts of contamination.

A special moistureproof Cellophane which retains all the other desirable properties of the regular product has been developed. This wrapping is said to keep hard goods hard and soft goods soft and has been found of distinct advantage as a covering for baked goods, sticky candy, fish, dried fruit and cigars.

Other characteristics are as follows: Oil- and greaseproof, odorless and odor-proof, strong and flexible, and air proof. Being made from the finest woodpulp obtainable, it is absolutely sanitary, in fact it is pure enough to eat although not digestible.

Cellophane lends a sparkling appearance to a package that attracts the shopper's eye to the wrapped article and commands attention. Likewise the appetizing goodness of food products are clearly evident through this type of transparent wrap which not only lends a distinct quality atmosphere to any article it wraps but makes an article ideal for display on the counter.

Cellophane can be supplied in stock size sheets 40 in. in length and from 34 in. to 37 in. in width, in sheets cut to specification or in rolls of various widths and weights for machine wrapping or any other use requiring continuous lengths. It can be procured in various thicknesses, embossing and colors as well as in a special moistureproof sheeting.

It is approximately .0009 in. in thickness, and thicknesses up to .007 in. are available if desired.

This material can also be fabricated into envelopes, used as a window in boxes and it may be printed permitting the manufacturer's trade mark and advertising identification.

Genuine Vegetable Parchment

By JOHN R. DUFFORD

THERE are essentially two kinds of parchment, animal and vegetable. Animal parchment is the prepared skins of animals, usually sheep, and has been used in the past chiefly for documentary purposes. Vegetable parchment, as the name implies, is basically of vegetable origin.

The preparation of pure vegetable parchment consists of two separate and distinct processes. The first is that of manufacturing the paper later to be parchmentized, called waterleaf. In order that the second process, that of parchmentizing, may be effectively conducted, it is necessary to exercise every care in the selection of raw materials entering into the waterleaf, the purest cellulose producing the best results. Waterleaf for vegetable parchment differs from most papers in that it does not contain sizing or loading materials. Small quantities of either of these substances seriously impair the parchmentizing of the waterleaf to which they have been added. As the resultant finished parchment is in a large measure dependent upon the quality of the waterleaf, it is clear that the processing of the waterleaf requires expert supervision and attendance.

The second process in the manufacture of vegetable parchment is that of parchmentizing. It is this process which renders the finished product so widely different from other papers. When properly prepared, waterleaf

Parchment-wrapped butter reaches the consumer in perfect condition

is subjected to the action of sulphuric acid under suitably regulated conditions, a peculiar reaction occurs. Action of the acid at first produces a gelatinous substance called amyloid, which completely envelops each individual fibre. The amyloid, in addition to having enveloped the fibres, has filled the interstices between them and by a cementing action has bonded the material into one homogeneous mass.

Thus we find the original waterleaf has undergone such modification by treatment with sulphuric acid that it no longer softens or separates into its constituent fibres on being immersed or even boiled in water or salt solution, but retains its coherence, is impervious to water, grease, blood and air, and preserves its newly acquired properties when re-dried. Pure vegetable parchment is semi-transparent, odorless, and tasteless.

EVERYONE who has had to deal with moist, delicate perishable food products such as butter, ice cream, fresh meats, etc., appreciates that their marketing value is considerably elevated by using the proper wrapper.

Butter, the extremely important everyday article of food, is one of the most delicate of food products and is exceedingly susceptible to contaminating influences.

. Parchment lining prevents formation of iron sulphate

Realizing this fact, every precaution is taken in the manufacture of vegetable parchment to have the product reach the consumer in as pure and sterile a condition as it is humanly possible to make it under operating conditions. Even so, it is admittedly good practice to subject the butter wrappers, tub liners and circles to the action of boiling water or boiling super-saturated salt brine immediately before using. The effect of the above treatment is twofold, the heat destroying the mold spores that may adhere to the parchment, and the brine adhering to the parchment helping to inhibit growth of mold germs that may be in or on the butter.

One can readily understand that this extremely important preventative measure against mold infection would not be possible if ordinary paper were used. Under this treatment the paper would disintegrate to a pulpy mass and be rendered useless as a food wrapper. However, one of the outstanding properties of pure vegetable parchment, its insolubility, renders it extremely adaptable to this procedure. Then, too, this inherent quality of vegetable parchment, the fact that it does not disintegrate in contact with moisture, makes it possible for the ultimate consumer to not only remove the wrapper intact, but also, if only a portion of the product is to be used at one time, to rewrap the remainder, thus

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preserving the original good qualities of the butter until entirely consumed.

THE property of butter to readily absorb foreign odors and acquire an unpleasant taste makes it imperative that a butter wrapper shall be odorless and tasteless. Pure vegetable parchment is odorless and tasteless and these characteristics unquestionably recommend its use to the packer of butter.

Butter tends to lose moisture during transportation and in storage. Aside from the reduction in actual value, due to the diminished weight through loss of moisture, excessive leaking may injure its flavor. Vegetable parchment, being impervious to moisture and air, not only reduces this shrinkage to a minimum, but in storage prevents, to a large extent, losses incurred through contact with air, which causes deterioration of butter through oxidation or bacterial action, or both. Parchment-wrapped butter is also protected from the direct action of light, the tendency of which is to intensify bacterial action.

The general wide-spread demand for clean food makes it necessary for the producer to market his product in as cleanly and attractive a manner as possible. The translucency of the parchment wrapper presents the butter, on removal from the carton, in a clean, wholesome, and appetizing condition. When printed with colorful designs of the various brand names in brilliant fast color inks, parchment has sales appeal as well as protective qualities. Then, too, the print may be handled with facility because the fatty constituents of the butter have not permeated the parchment. It is the predominating characteristics of pure vegetable parchment briefly outlined above that have earned for it the distinction of being the best protective wrapper for moist food products.

Glassine Paper in Packaging

By BENJAMIN H. BALLARD

GLASSINE paper is a cellulose product. Spruce fibre, pure water and a small amount of vegetable sizing are used in its manufacture. No chemicals are used. Practically one-third of all the vegetable matter in the world is cellulose. Cellulose is closely allied to starch in chemistry and starch may be changed into glucose by strong sulphuric acid.

The natural cellulose, an opaque body, when beaten for a prolonged period undergoes a remarkable change, losing its fibrous structure and becoming a curious transparent cellulose, owing to the assimilation of water. Formed into a sheet of paper and super-calendered we have "glassine".

First produced in Germany as a novelty, glassine has become a standard article of commerce and is used in all parts of the world. The United States manufactures better glassine and more of it than any other country. The use of this paper has increased tremendously in recent years largely due to its improved quality and adaptability to package machinery operations. There are so many ways in which it can be used to advantage that the consumption is rapidly increasing.

Although recognized as an ideal wrapping agent for many purposes, it was found that with the development in the packaging of foods of a perishable or semi-perishable nature, better protection is given such articles when the glassine is waxed. Treated with a coating of tasteless and odorless paraffine wax the glassine becomes a most effective protective wrapper, for in addition to the greaseproof, dust-proof and transparent qualities it becomes moisture-proof as well.

		Package Unwrapped	Package Wrapped in 33-Lb. Waxed Sulphite		Package Wrapped in 29-Lb. Waxed Glassine		Relative Humidity, %
Date	Wt.	% Change	Wt.	% Change	Wt.	% Change	
Aug. 3	296.5		306.0		314.7		33
4	304.7	2.76	307.5	.49	314.7	.00	33
5	308.5	4.05	308.9	.95	314.9	.06	44
7	318.4	7.39	312.8	2.22	315.7	.32	68
8	327.7	10.52	315.7	3.17	315.7	.32	72
9	332.4	12.11	316.3	3.37	315.7	.32	57
10	318.5	7.42	314.1	2.65	315.4	.22	42
11	321.6	8.97	315.2	3.01	316.1	.45	36
12	321.2	8.33	316.0	3.27	315.7	.32	40
13	327.0	10.27	319.0	4.25	316.2	.48	52

The accompanying table shows the result of tests made to determine the effectiveness of waxed glassine as a moisture resistent in the wrapping of corn flakes. In these tests three packages of corn flakes were used, the first simply the ordinary paper carton, the second the paper carton with an inner wrapper of 33-lb. waxed sulphite and the third the paper carton with an inner wrapper of 29-lb. waxed glassine. Corn flakes were dried in over 212° F. for 20 minutes. All weights are in grams and include carton plus cereal. Per cent of weight changes are based on Aug. 3 weights.

The results of these tests on corn flakes are typical of many others conducted to determine the effectiveness of waxed glassine and invariably this form of wrapper displays its superiority as a moisture resistent in comparison with other forms of wrappers, in about the same ratio. The results are also consistent with those obtained by consumers of waxed glassine who are already using this wrapper in the packaging of their products.

Other waxed papers are used extensively by the manufacturers of various food products, but waxed glassine has proven itself superior for certain commodities so that, in several instances, it has supplanted other waxed papers. For instance, the baking industry has adopted waxed glassine as practically a standard wrapper for cakes, cookies, etc., within the last three years. The biscuit and cracker manufacturers have also turned to waxed glassine as an ideal protective wrapper for their products as it keeps their biscuits and crackers "oven-fresh" until they reach the tables of the consumer.

Glassine paper as commercially produced to-day is comparatively strong, flexible and pliable. When waxed it becomes self sealing and its transparency is enhanced. Used as an outside wrapper for a printed carton it presents a glass like appearance through which the finest print is plainly legible. This results in the maximum advertising and sales value of the well printed cartons which are coming into favor in present day methods of packaging and merchandising.

Unless the manufacturer of packaged goods utilizes the advertising value of a neat, attractive container which will identify itself distinctively with his particular product and which will "tie up" with his other advertising, he is overlooking a splendid opportunity to "cash in" on additional business which would cost him little extra to secure.

Waxed Papers in Packaging*

WAXED papers (sometimes called paraffin papers) are of three types:

1. **Dry Waxed Paper** in which the fibres have been saturated with pure paraffin wax but which carry no wax on the surface, thus being called "dry waxed" because of the nature of the sheet.

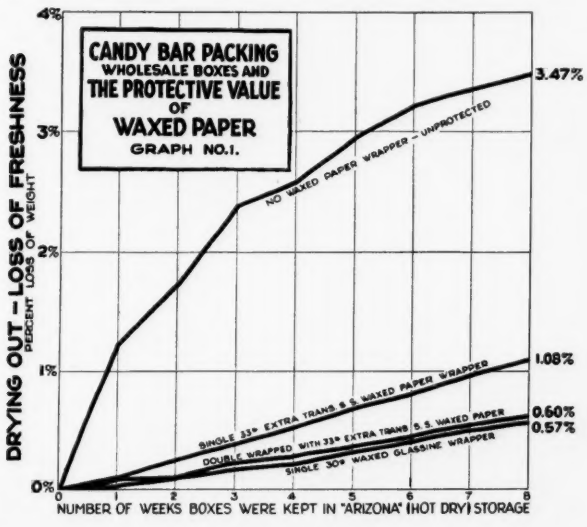
2. **Full Waxed Papers**—Here in addition to the wax which saturates the fibres, there is also a coating of wax on the surface of the sheet but not enough to make heat-sealing readily possible.

3. **Self-Sealing Waxed Papers**—Here we not only have the fibres saturated and a coating of wax on the surface but there is sufficient excess wax on the surface to make it possible readily to heat-seal the sheet around the package by means of momentarily melting the wax and maintaining a slight pressure until the melted wax has again set, forming a seal.

Dry waxed papers are good "twenty-four hour sheets" and admirably suited for use by delicatessen stores, groceries and meat markets as a covering and wrapping for moist and greasy products which require protection only for a short period of time. They are not near as airproof as self-sealing waxed papers but unlike the former, can be formed into bags by the use of various common adhesives.

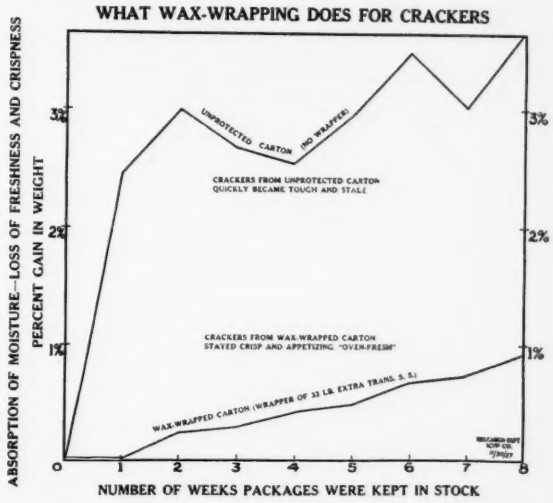
Self-sealing waxed papers are airproof and when wrapped around any product, especially food products, either prevent moisture, odors, etc., being absorbed by the package product or prevent the moisture, aroma, flavor, etc., already in that product from escaping.

Other advantages are the protection afforded the packaged product against insect infestation. Insects of all sorts seem to have a particular aversion for paraffin wax and seldom, if ever, bore through a sheet of self-sealing waxed paper. It is also an insulator, preventing rapid temperature changes in products wrapped in it. Besides keeping food products clean, it strips well from many sticky products such as candy and mincemeat. In the packing house it is the best preventative against "freezer burn".

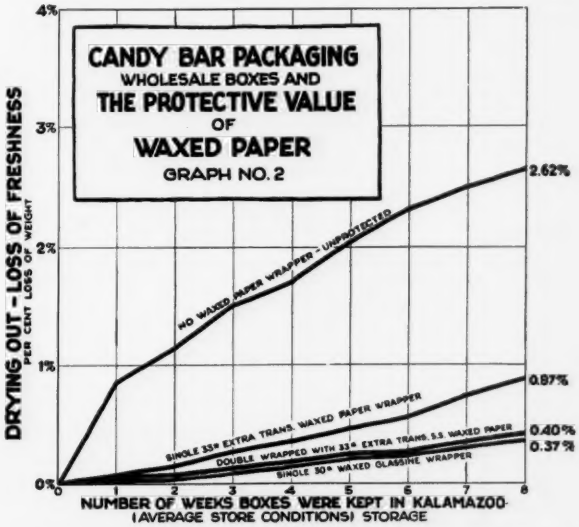


Waxed paper, unlike vegetable parchment paper, is neither waterproof nor greaseproof, but as pointed out, self-sealing waxed paper is airproof where parchment is not.

Waxed paper both in experiment and actual use has demonstrated its higher protective value. Wheat flakes kept in cartons not protected by waxed paper lose all their crispness and become tough. When kept in cartons lined or wrapped with waxed paper, they remain in the same fresh, crisp, appetizing condition in which they leave the factory.


WHAT WAX-WRAPPING DOES FOR CRACKERS
ABSORPTION OF MOISTURE—LOSS OF FRESHNESS AND CRISPNESS
PERCENT GAIN IN WEIGHT
UNPROTECTED CARTON (NO WRAPPER)
CRACKERS FROM UNPROTECTED CARTON QUICKLY BECAME TOUGH AND STALE
CRACKERS FROM WAX-WRAPPED CARTON STAYED CRISP AND APPETIZING "OVEN-FRESH"
WAX-WRAPPED CARTON (WRAPPER OF 33 LB. EXTRA TRANS. S. S.)
NUMBER OF WEEKS PACKAGES WERE KEPT IN STOCK

The H. J. Heinz Co., as a result of tests in which various types of packages for Rice Flakes were exposed to moisture, decided in order to keep the flakes fresh and crisp, both a liner of waxed paper inside the carton and an outer waxed paper wrapper sealed around the carton were desirable.



Ground coffee packaged in wax-wrapped cartons retains the volatile oils which give it flavor and aroma. Waxed wrapped cartons containing calcium chloride, a chemical which greedily absorbs moisture, stays dry and

*Courtesy Kalamazoo Vegetable Parchment Co.

hard while unprotected packages become soggy, wet and soft. When bread wrapping was a new thing, tests were run showing unwrapped bread lost as high as 17 per cent of its weight in moisture and became very stale and unsalable by the end of the second day after baking. Wax-wrapped bread lost only one or two per cent and remained salable four or five days after baking.

These are but a few instances of the protective value of waxed paper. More and more manufacturers are taking advantage of it. The sanitary appeal and value of wax-wrapping is obvious.

The Uses of Metal Foil

By HOWARD BAKER

THE reason for the use of tin foil as a wrapper lies in two notable characteristics—beauty and utility. The appearance of a bright, metallic surface has always awakened human interest. Perhaps this is due to the original use of metal pieces as money. Metal, therefore, represents wealth or real intrinsic value. This property of attracting the public eye and inspiring the observer with a sense of value as well as the decorative appearance of polished, metallic surfaces is utilized by automobile manufacturers in dressing up their cars with polished nickel plated trimmings. So, in the same way, does a product dressed in a tin-foil wrapper impress the observer and purchaser as something of real worth.

gases will pass through. Even such infinitesimal particles of matter and vibrations of the ether as X-rays, radium emanations, radio waves, etc., are effectually stopped. Nothing is quite so effective as a solid metal sheet to stop diffusion of the small units of matter. Candy dries out and becomes stale due to the loss of original moisture. Cheese not only loses its moisture and dries out, but the outer surface thereby becomes inedible due to the formation of what is called rind. Thus a considerable portion of the cheese is ultimately wasted as by the time the cheese is sufficiently aged to be attractive the rind constituting a considerable percentage of the same has to be thrown away. In addition to this, mold

A group of nationally known products which make use of metal foil in packaging

Besides this element of beauty and its psychological appeal to the buyer, the element of utility is of even greater importance in the preparation of packages, as in many instances such packages would be impossible without the use of foil. Thus it is evident that when we combine beauty and utility we have achieved a satisfying efficiency and that the particular properties of foil render this achievement capable of realization.

WHAT then is the utility of the tin foil wrapper and wherein can we make best use of the properties of metals to put such a combination into our hands? A metallic surface is impervious. Neither liquids nor

is apt to form. In the packaging of a five-pound loaf of pasteurized cheese tin foil is used as a box liner and the package is filled with the cheese in a warm, soft state. The cheese makes an intimate contact with the pure tin foil so that there is no possibility of air coming in contact with the outer surface of the cheese. There is, therefore, no drying out, no rind, no mold possible. The use of foil in this manner is not entirely an automatic proposition as the foil is usually placed in the boxes by hand. A small sheet of foil is also placed in the ends of the boxes. The large sheet of foil called "side foil" is usually printed with an attractive design showing the cheesemaker's or distributor's trademark in one pound

or half pound units and is frequently provided with "cutting lines" showing divisions of the cheese down to quarter pounds. As there is practically no loss in weight from the time the cheese is put up to the time it is cut in the grocery store, these markings guide the grocer in cutting the desired weights of cheese for the customer. This is efficiency to the last degree in putting up and marketing a food product.

The half- and quarter-pound packages of cheese are prepared somewhat differently as they are put into a foil lined paper carton which is die-cut and is automatically folded around the package of cheese. Frequently the foil is also furnished die cut to eliminate some of the bulky corner folding. Foil for these packages is usually supplied mounted on waxed paper, sometimes on waxed glassine paper.

AN automatic machine of foreign manufacture is obtainable which puts up small packages and individual portions of cheese. Foil for this purpose is furnished in rolls as the machine die-cuts the foil, presses it into a mold, fills the foil lined mold with cheese, presses on another piece of foil—also cut from another roll—and crimps the two pieces of foil together in such a manner as to make an absolutely airtight package. The furnishing of tin foil in rolls has been a great convenience to automatic wrapping machines and has not only been of benefit to the foil industry but has increased the marketability of the product and general efficiency all along the line from food manufacturer to retail customer.

Foil is also used on small packages of cream cheese, circular packages of the new cheese products and on one- and two-pound Limburger cheese. Foil wrapper for the last named type of cheese not only protects the cheese but protects the dealer and all the customers of the retail store making the marketing of Limburger cheese possible.

Foil is coming into use in butter packages and besides having the characteristics of beauty and utility will probably go a long way toward preventing butter from turning rancid.

An interesting marketing situation has arisen in connection with chewing gum. A few years ago chewing gum was chiefly vended to the general public through penny slot machines. Outside of the penny slot machine it was considered that chewing gum had to be sold in five cent packages of five sticks. The package was carefully wrapped in heavily waxed paper. Mr. Average Citizen, as he walked by a stand hurridly, did not care to purchase a five-cent package of chewing gum and, therefore, dropped his penny in the slot machine. The operator of the candy and newsstand thereby lost the sale and found it necessary to break up the five-cent packages of gum and scattered them around so that the busy man could drop his penny and pick up a single stick. The paper wrapped single sticks were no longer satisfactory as they not only were not sanitary but quickly lost the original freshness. Wrapping the individual stick of gum in tin foil has, therefore, increased the sale of gum in this manner.

There have been movements introduced in several of the big cities to compel all bars of candy and other confections to be put up in wrappers that are absolutely proof against the loss of moisture and the absorption of other odors, bacteria, etc., while they lay in the same showcases with other products in the store. A metallic foil fulfils the requirements of a satisfactory wrapper for such a purpose.

PROBABLY the earliest users of tin foil were the tobacco and candy industries. Bulk packages of tobacco are wrapped by automatic machinery at a high rate of speed with a combination of tin foil and heavy manila paper. The tin foil is mounted either with wax or with glue lines on the heavy paper and is furnished to the tobacco manufacturer either in sheets cut to the desired size or in continuous rolls. Automatic wrapping machines are built to take this foil product in either form. In this particular case of the cigarette package the tin foil is used more for its utility than for its beauty, as the tin foil is on the inside of the package next to the tobacco and does not show until the package is opened up. The use of a metallic wrapper for tobacco prevents the loss of moisture, freshness, fine flavor and aroma. The cigarette package is a similar product but is made from a little lighter weight paper combined with the tin foil. The tin foil used for these purposes is a rather inexpensive composition of tin and lead in such proportions as to give the maximum yield in square inches per unit of cost. Enormous quantities are used in the cigarette industry and no cigarette manufacturer would think of wrapping his cigarettes for popular consumption in any other way. These cigarette packages are, of course, also put up by automatic machinery and the tin foil mounted on paper is furnished in rolls.

The cigar industry also relies on the aid of tin foil as an attractive and successful wrapper for cigars. The cigar maker can make use of tin foil in several different ways. One is to wrap each individual cigar in a small piece of embossed tin foil. This preserves the freshness, moisture and aroma of the cigars and greatly increases their beauty as they lie in the box. Then again some cigars instead of being wrapped individually are wrapped in bundles of two, three, five or as desired. For this purpose the foil is furnished in larger sheets mounted on waxed tissue paper and is usually printed with an attractive design in such a way that the printing falls on top of the bundle of cigars where it can be readily seen. The third method of using foil in connection with the cigar box is to line the box with foil. For this purpose two sheets are usually used crossing over and folding on top. One large sheet can be used with two end pieces and some manufacturers are now experimenting with foil cut in the form of a cross so that the arms of the cross fold over the ends and top of the box. A flap of tin foil over the top of the cigars lying in the box is, of course, decorative but the chief function of the foil here again is to preserve the freshness of the cigars.

The candy industry can make use of foil in a number of different ways. To preserve the freshness and flavor of the candy it is necessary to retain all of the original moisture and flavoring ingredients and foil is admirably suited for this purpose.

THERE are a number of other food products which make use of foil for preserving and beautifying purposes, such as meat loaf, sausage, ice cream bars, fruit cakes and other cakes, biscuits, hops, tea and other products. A number of articles of merchandise that are not food products are wrapped in foil for the same purpose. One rather large user of foil is the soap industry. Another is friction tape. Foil makes a very successful package for this last named article and as it is distributed in such enormous quantities it constitutes a large use for foil. The wrapping of rolls of friction tape of various sizes constitutes a modern package as the operation is largely done now by automatic machinery which takes foil in rolls.

The modern, neat and attractive bottles of ginger ale, grape juice, or other prohibition era beverages owe a large part of their attractiveness to the use of a piece of tin foil on the neck of the bottle.

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Carton and Can Filling Equipment

By WILLIAM K. EMBLETON

THIS is a machine age and especially is this true in the production of packaged foods and other materials. The manufacturer of materials marketed in packages, regardless of whether his output is large or small, must of necessity depend on machinery for his production if he hopes to gain and maintain a position in today's intensively competitive market.

Profits today in most instances must come through improved and faster production methods in lessening manufacturing costs rather than in the hope of maintaining selling costs above the average.

The development and perfecting of automatic machinery enables the packer to obtain quantity production at lower costs, to standardize the sizes of his packages, and enable him to carry to the consumer, through the message printed on his package, a standard name or trade mark by which the consumer can again seek his particular brand of products. This insures the packer his reward for maintaining qualities.

It is only a few generations back that food stuffs and many other materials were distributed in bulk form, sugar and flour by the barrel, butter by the firkin, and many other edibles, such as crackers, rice, starch, coffee, salt, and spices were sold loose, dipped from dusty bins or picked loosely from barrels by unclean hands.

Today, we are enjoying a new era. The package is with us to stay because it insures consumers their money's worth in quality and weight, and the exact brands preferred. The manufacturer and retailer understanding this pack innumerable sorts of necessities and conveniences of life (ranging from cooked foods to cosmetics) in packages, cartons and cans, representing a new necessity in merchandising, a unit of distribution that must be considered and for each product, and each new package, there must be and is an automatic machine available that will produce it in a sanitary and efficient manner at low cost.

AUTOMATIC machinery is the foundation on which the structure of many American merchandising successes have been reared. Slow and costly hand production methods have eliminated many manufacturers from competitive markets.

There is no necessity for any manufacturer to depend on hand labor in preparing his package, as American machine designers in the last decade have developed and refined automatic machinery for every packaging purpose to such an extent that today a machine is obtainable whether the packaging process follows standard practices or is of a special nature.

Inasmuch as machinery must be considered somewhere in all packaging production plans, the first consideration is the positive necessity for careful attention and preparation of the various component parts in the make-up of the package.

This thought cannot be stressed too highly. All materials entering into the make-up of the package should be purchased with a view to their efficient handling by automatic machinery.

As for instance, in considering a carton product, the size of the carton should be carefully worked out to obtain the best dimensions for easy machine handling. The construction of the carton should be carefully planned to be sure that the side gluing seams are in proper position, and the side flat cut to the proper length. Careful attention to these details in the beginning will save both the packer and the machine manufacturer a great deal of trouble and grief when the time comes for installing machinery.

This does not mean that cartons, protective papers or labels for machine handling differ importantly from the same materials that would be used for hand packing. It simply means that there are certain necessary features and specifications to be followed to make sure that all materials will follow uniform lines. All cartoning materials handled on automatic machines are manufactured on accepted commercial standards, but it must be borne in mind that a machine is made of iron and steel, along fixed lines, and if the material fed to the machine differs in size and shape, then trouble is bound to ensue.

As an illustration, if sealing and filling were the only consideration, a carton might be planned to obtain the largest possible face, perhaps because an advertising advantage might be seen. In doing so, the base of the carton would necessarily have to be narrow, so much so that when handled on a machine, this narrow base would mean a constant tipping of the carton, with its attendant troubles and delays.

Therefore, in planning your carton, care should be taken to have the various dimensions properly proportioned. The ideal specifications are to have the face of the carton approximately twice the thickness, the height one and one-half times the width. The cubic content of the carton must be carefully considered. If a pound of ground coffee is to be packed by hand, a carton containing about 66 cubic in. would be sufficiently large for the reason that there is no time limit to the tamping or settling of the coffee, whereas if the carton were handled by machine a cubic content of 72 cubic in. would be necessary for the reason that the carton passes through the machine on a certain definite time schedule and receives a definite amount of tamping. Machine experience proves that with a carton containing 72 cubic in. a pound of ground coffee would settle nicely just below the score or folding lines of the side flaps.

IN the matter of labels and wrappers, care should be exercised in obtaining them with the grain of the paper running the same as specified by the machine manufacturer. Paper curls with the grain of the paper and when labels or wrappers are moistened, the paper stretches with the grain. If the labels are handled by hand, sometimes it is not important which way the labels curl or the way the paper stretches, but if handled by machine the curl and stretch must be one way and the same with every label.

Label and wrapper manufacturers are always glad to follow definite specifications for grain of paper when so ordered. Again, it is simply a question of care in ordering and being sure that the specifications are correct.

Any manufacturer of automatic packaging machinery will be glad to furnish definite specifications covering the construction of cartons or the make-up of labels. Securing these details will save many weeks of labor later

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on when machine production is planned both on the part of the packer and the machine manufacturer.

Many packers hesitate in the beginning to think of using machinery believing that automatic machinery will prove too expensive for their purpose. Investigation will prove this is not true, as machine manufacturers are able to furnish equipment that will economically fit in with the requirements not only of the larger packer but also with the packer whose output is small.

The market today offers everything from inexpensive semi-automatic equipment, which operates at comparatively low speeds, to the highly specialized fully automatic equipment, operating at the higher speeds, and no matter which class of machinery is used, they are all planned so that with their use, outputs can be obtained more efficiently and economically than by hand labor.

Packers just establishing a carton packaging business can install a semi-automatic carton sealing machine. This would require the services of an operator and would produce from 12 to 15 satisfactorily sealed cartons per minute. For the weighing operations, he can obtain a small semi-automatic weighing machine which will operate at the same speed as the carton sealing machine. These two machines can be hooked together by connecting conveyor belts so that as the cartons are sealed they are automatically passed along to the weighing machine. An operator would be necessary at the weighing machine, but even considering the investment of the two machines, the upkeep charges and the labor costs of two operators, packages can be produced at a far less cost than the same number can be produced by hand labor.

As outputs increase, speedier and more fully automatic equipment will be needed. The semi-automatic machines can then be discarded in favor of a battery of machines with which the entire operation of picking up the cartons one by one and feeding them to the sealing machine, then automatically passing them to the weighing machine, and after the material is weighed and filled into the sealed cartons they are passed to the sealing machine for closing and sealing the tops.

Should the product be of a character to require extraordinary protection against atmospheric or other conditions an inner paper bag liner would have to be used. This lining would require an additional machine placed between the bottom sealing and weighing machine. The lining machine taking paper from a roll, cutting off the proper length, forming the bag and inserting the finished bag into the carton.

A set of machines of this character would make the entire packaging process entirely automatic, only one attendant being necessary to see that the machines are properly oiled and kept in good running order.

Equipment as above described would deliver thirty complete sealed, lined and filled packages per minute.

FOR the packer whose output exceeds 15,000 packages a day, equipment of higher speeds will be necessary and equipment at 60 packages per minute will interest him. This high speed equipment performs the same operations in the same manner as described for 30-per-minute equipment in the same general line up, each individual machine, however, is more sturdily and elaborately constructed, and naturally, this heavier equipment is considerably more expensive than that operating at the lower speed of 30-per-minute.

The equipment just described would be used by the manufacturer packing in the plain printed carton, used without any outer wrapping. Materials such as tea, coffee, spices, sugar, rice, borax, cocoanut, drugs, poultry and stock remedies, macaroni, starch can be packed without any further protection than the printed carton, with sometimes the inner liner.

In many instances, the character of the material packed may demand a package that would offer greater strength than the printed carton, and would also embody superior protective features. The modern machine designers have met this higher requirement with a machine called the tight wrapper, which produces the highest type of package yet devised. This is made of an inexpensive chip board shell which is formed, lined, filled and sealed in exactly the same manner as the printed carton on exactly the same machines, after which it is automatically passed along to the tight wrapping machine which applies a printed wrapper around the chip board shell. Adhesive is applied all over the entire surfaces of this wrapper. It is then registered to each of the four panels of the shell and neatly turned in at each of the ends. This printed wrapper, as it dries, shrinks tightly to and adheres to every portion of the chip board shell and becomes almost an integral part of the shell.

This process of laminating the shell and wrapper produces a package fully 50% stronger than ordinary printed cartons, and is particularly to be recommended where the product packed is of a dusty and sifting nature, for the reason that by placing the wrapper around all of the sealed edges of the shell, it closes every crevice and corner. It is literally a "tight" wrapped package, positively sift-proof and the only package yet devised that is proof positive against the inroad of bug and weevil life. The tight wrapped package is particularly to be recommended for the packing of cereals, flour and other products which are subject to weevil and insect infestation from the outside. Cereal and flour manufacturers go to great lengths to be sure that all weevil life in their product is killed before it is placed in the packages. Until the advent of the tight wrapped package, they had no protection against the infestation from the outside through the carton being placed in close proximity to other infected materials.

The phenomenal strength of the tight wrapped package means that the manufacturer has less breakage to contend with and, therefore, can afford to ship in lighter and less expensive containers.

The above treats of rectangular packages only. Separate types of machines are necessary for producing round packages, but as in the case of the rectangular package, automatic machinery can be obtained for every process in the make up of the round package, first, weighing material and filling it into the package, then applying the cans and labeling.

AS in the case of the rectangular packaging machines, round packaging equipment is manufactured in various types, ranging from the semi-automatic at slow speeds to the high speed fully automatic equipment operating at a speed of 60 per minute.

The weighing machine units include those that will weigh gross, that is, including the weight of the container with the weight of the goods; others that weigh the material net. This is accomplished by weighing first in calibrated and balanced receivers, after which the material is poured into the waiting containers. Net weight weighers are particularly desirable where the material handled is of an expensive nature and extreme accuracies desirable. The savings in wastage alone with this type of machine oftentimes pays the cost of the machine in a short time.

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Practically every labeling need can now be met with machinery of standard construction. This includes loose labeling machines, which apply the label loosely around the can, just applying the glue at the seam of the label or a rim of glue around the top and bottom of the label. Types of loose labeling machines are manufactured for labeling either round or rectangular cans. Then, there is the shrink-tight labeler, which is necessary for use when cans with high outstanding beads are to be labeled, these similar to the standard baking powder cans, or where the covers of the cans are of larger diameter than the bodies. Loose labels cannot be used with this type of can, for the reason that the high outstanding bead or the larger covers hold the label away from the body of the can, producing unsightly wrinkling, and a label only half attached.

The shrink-tight labeler overcomes this difficulty by passing the label through a bath of tepid water. This allows the label paper to stretch, the stretch in the label paper being about $\frac{3}{8}$ in. to the foot. Adhesive is then placed over the entire unprinted surface of the label while it is wet; it is then carefully registered around the can, which is passed along to an automatic dryer. The air in this dryer is heated. A series of revolving shelves move slowly around, so that the label dries gradually, and in so doing, shrinks tightly around the high outstanding bear or the oversized covers, as the case may be, without the slightest wrinkle, and insuring the covers being held tightly to the bodies of the cans, eliminating any possibility of leakage. About one-half hour is required to make the journey around the dryer, after which the can is automatically ejected.

Labeling machines can be obtained in various sizes to operate at various speeds. They range all the way from semi-automatic hand tools, with which one operator will label from 15 to 18 cans per minute, to the shrink-tight labeler which performs all of the operations of feeding the labels, dampening them, applying them to the cans, and then placing the cans in the automatic dryer, this without an operator of any kind being required, except the usual attendant for the general care of the machine.

Practically all types of carton packaging, filling, wrapping or labeling machines are constructed so that they can be adjusted to several different sizes of cartons within reasonable range. Different commodities can be handled on the same machine where the characters of the commodities do not change too radically. This is done by fitting the filling machines with hoppers especially designed to meet the requirements of the different products.

Care should be taken when purchasing machines to choose manufacturers who can assure a reliable service that will maintain the machines in good working condition, and so guard against any break in packaging operations which will curtail output.

Bottle Filling Equipment

By WM. K. EMBLETON

MODERN machine methods of packaging liquids and semi-liquids began with the advent of the vacuum filling process in 1916. Prior to that date real courage was required to engage in the business of packing liquids or semi-liquids in bottles or jars, for the evils of the finishing rooms of hand packing days made the thought of engaging in that particular business one of reluctance and dread.

Since the development of the vacuum method for filling liquids tremendous strides have been made in the development of mechanical means for packaging the hundreds of standard medicines, condiments, liquids, and semi-liquid foods, such as vinegar, mustard, olive oil, tomato ketchup, mayonnaise and French dressing. These are now filled in the standard size bottles by automatic machinery which eliminates entirely the old terrors of slow hand pouring methods, the spilling of materials over bottles, inaccuracies of quantities filled and the consequent uncleanliness of the finishing rooms.

It is a far cry from the old finishing room where operatives dipped liquids from tanks and poured them into bottles through funnels, guessing at the weights, to the modern line up of machines which perform the major operations of filling and applying the caps by synchronized machines operating and under the control of one operator.

It is not an uncommon sight in many finishing rooms to have the bottles labeled before they are passed through the filling and capping machines; even inks are so labeled by machine without the slightest danger of marring the labels with drippings from the nozzles.

Uniform fillings are positive. Small or large cans are filled, with the assurance that the same uniform quantity of material is deposited in each can. The need of check weighing to gauge the contents of the can is eliminated and it is no longer necessary to "peek into the cans to see that they are filled."

There is no reason why manufacturers of liquid products in this day of mechanical perfected machinery should depend on hand labor with its attendant expense, inaccuracies and constant danger of spoilage of packages through discoloration of labels. His needs can be economically met no matter if he is filling but a few bottles a day or whether he has a production sufficiently large to employ the use of one of the fully automatic machines which fill and cap 120 bottles per minute every minute of the day.

THE vacuum system consists of a supply tank, placed below the level of the bottles to be filled, and connecting with the supply tank are the supply pipes or lines. A filling nozzle is attached to each line or pipe, these being parallel. Connected with the supply tank is an overflow receptacle. When the machine is to be operated the vacuum pump is turned on and started. This feeds a vacuum into the overflow receptacle, which is air-tight. As soon as the vacuum is fed into the overflow receptacle, that in turn feeds a vacuum at the lower end of the air line or suction end of the nozzles.

Around the suction nozzles is a round gasket. The bottle is brought up in close contact with this round gasket, making a positively air-tight seal. This immediately creates a vacuum in the bottle, if the bottle is perfect. Should there be a hole in the bottle or leak of any kind, outside air will naturally leak into the bottle rapidly, as the inside air is sucked out.

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When the bottle is perfect a vacuum is created in it which puts a suction on the end of the liquid supply nozzles that in turn draws the liquid from the supply tank up through the supply tube and into the bottle. When the liquid in the bottle reaches the end of the overflow or suction air line, it automatically breaks the vacuum, causing a secession of the flow of the liquid into the bottle.

Perhaps one of the most ingenious types of these filling machines is the one which will automatically fill liquids into the modern all-glass sprinkler top type, sometimes called the non-refillable bottle. It is amazing how this wonderful machine will rapidly fill this type of bottle through apertures only one-sixteenth of an inch in diameter, without even a drop of the liquid being spilled to mar the appearance of the bottle or the label.

As in all cases where machine production is to be considered, careful thought and preparation should be given in choosing the design for the containers to be filled. Not only must the beauty of the design be worked out, but also how well the containers handle on the conveyors, intakes and deliveries on the machine that must be used to label and cap them.

The consideration of these factors is not essentially a matter of standardization so much as one of co-ordination, for to attain perfect machine handling, especially at high speeds, the container must lend itself readily to the requirements of the machine.

TOO often must the machine manufacturer accept freaks in the design of the package and find a way to deliver at maximum speed containers, which, if a slight change were made in the design would add as much as 30 per cent increase to machine speed and in addition, would simplify the adjustments on the machine, with a consequent saving of time when changes from one size container to another were called for.

No matter if the container to be handled is a long established design which cannot be conveniently changed, or, if, the container is new and about to be established there should be a close co-operation between the packer and the machine manufacturer, with a view to working out very remarkable economies by designing the containers to meet the machine limitations, and this without sacrificing in any way the beauty of line or design of the proposed container.

Close co-operation between the packer and the machine designer oftentimes means the difference between profit and loss in the bottle-finishing departments.

Various distinct types and sizes of filling machines are obtainable to accommodate the filling requirements of both small and large packers. These include all the variations between the very small and the very large. In every case the machines have been designed to require a minimum amount of human supervision.

For the packer of modest output, there is the medium-size type of equipment fitted with as few as six filling heads with a rated production of anything up to 40 filled containers per minute. These filled containers can be either capped by hand or with the aid of cap-tightening tools, although in most instances these are not satisfactory.

Fully automatic cap-feeding mechanisms can be purchased today with a comparatively small outlay of capital, these automatic cap-feeding mechanisms hooked up with the filling mechanisms so that the two machines operate as one. This automatic capper takes the caps as they are automatically fed through a hopper, picks them up one by one and spots them accurately on the containers and turns them down to any desired tension, but one operator being required to see that the hopper of the cap feed is replenished from time to time.

The cap feed and capper have been refined to an extent where there is no danger of marring the most delicate finishes. They also will feed all of the standard caps, continuous or divided thread, Amerseal and Duplex, with but minor changes in the feeding mechanism.

IN planning equipment for the bottling plants, discretion must be exercised in holding equipment requirements to a point that will insure all equipment installed being used very nearly to its maximum capacity. A safety margin should always be provided. For medium-size plants there is what is termed the semi-automatic vacuum-filling and screw-capping machine. In the first-mentioned item an operator places the containers on the intake side of the filling machine, pushes six or more on to a lift bridge, then raises a lever which carries the containers up and against the rubber seals; at the same time the filling nozzles descend into the necks of the containers. Almost instantly these containers are filled, all to the same uniform height. The operator then lowers the lift bridge and pushes the containers out on to either a rotary table or a motor-driven conveyor, on which they move to the machine for the next operation, for instance, corking.

Corks are automatically fed from a hopper into the container neck and then pressed home by either a rotary wheel or plunger bar. If screw caps are used instead of corks, the containers pass under an automatic feed, where the moving head of the capper picks up the cap, places it on the container and turns it on to any degree of tightness desired.

Both of these machines are of the semi-automatic type and will fill, cork or screw cap at an average speed of 30 per minute. The screw capper, in this instance, is fitted with but one head, applying but one cap at a time.

In the larger plants, where production is 200 gross or more per day, fully-automatic machines are used for all of the operations, the vacuum-filling, corking or screw capping. In this case, the labeled container is placed on the intake belt of the vacuum-filling machine by an operator at a speed of from 60 to 90 containers per minute, at least. They are then carried by motor-driven conveyor to the lift bridge of the vacuum-filling machine, which is mechanically raised so that the filling nozzles enter each and every container, the containers being filled to the proper height; the lift bridge is lowered again and the containers mechanically pushed out by the same movement onto a belt back of the filling machine and carried by this moving belt to the next operation. If containers are to be corked, this is accomplished in the same manner as described on the semi-automatic equipment, but at the same speed at which the containers are to be filled.

If screw caps are used, the machine will be fitted with six separate heads operating in rotation. This will be necessary to obtain the required speed. An automatic chuck picks up the cap, placing it on a container as it passes by, and automatically turns the cap to the proper tension. This tension is adjustable and easily regulated. From the machine the containers are carried to the packing bench to be placed in cartons.

THE modern package tends very strongly toward glass. Practically every packing plant in the United States has turned or is thinking of turning to this method of packing liquids and semi-liquids, as foods packed in

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glass present a much better appearance on the grocer shelves and enable housewives to see the contents.

In packing in glass, particular attention and care must be given to obtaining the proper pressure. The ideal type is one that can be easily sealed and resealed. The housewife ordinarily does not use the entire contents of a container at one time and it is an accepted fact that a container that can be quickly unsealed and resealed appeals to her because she knows that when the seal has been first taken off, it can be easily replaced, preventing the spoilage of the food product—with its consequent monetary loss—and the natural annoyance to the housewife.

Rather recently powders have been successfully filled by means of vacuum in much the same manner as liquids are filled by volume. This process is particularly adaptable to certain light, free-flowing, fluffy powders, and in many cases a more solid pack can be put into the container by vacuum manipulation than by mechanical tamping. Great advances in speed have been recently developed with the volumetric method of filling powders, and when specifications lend themselves to this type of machine, production can be obtained as high as 100 to 120 packages per minute.

There is a wide range of machine speeds to be obtained, and with such a variety of methods and speeds almost any type of powder can be filled economically at the particular speed required. With such a variety of methods to choose from you can be assured that the best method particularly adaptable to your powder and your package is to be had.

Automatic Wrapping of Packages

By ALDEN FRENCH

NOT many years ago, soda crackers, prunes, tea, coffee and other food products sold in bulk, led an uninteresting life in the bins of the merchant's store. They had no name, no trade-mark—they were orphans in the world of commerce. They were dished out into a paper bag with a tin scoop when a customer came in to buy. Go into a grocery store now and see these same products on the shelves! Gone are the barrel and tin scoop and in their places are the carton and the tin attractively wrapped in a bright label, displaying prominently the trade-mark name of the package and the name of the manufacturer.

This is indeed a change from the old way. The buyer knows what he is getting—and he gets it in a convenient form of package, well wrapped and so carefully protected that the goods are as fresh when opened as when they left the factory. An entirely new production problem has resulted from this change. Naturally the costs of putting up products in separate packages are much higher than when they are sold in bulk, and these costs would be prohibitive were it not for the development of automatic machinery.

The art of automatic wrapping is of comparatively recent origin. In 1903, a machine was developed for wrapping single sticks of chewing gum and was installed in the factory of the Adams Chewing Gum Co., now a part of the American Chicle Co. This machine turned out 20 sticks per minute, a speed which the manufacturer said was entirely too fast. This rate, however, was gradually increased to 40 and not long afterwards to 60 sticks per minute.

ABOUT 1907 a machine was built for wrapping rectangular cakes of laundry soap. It was designed for the simplest form of wrapping, namely, putting a single wrapper around the package. The first advance was in using two wrappers, an inside dry waxed liner and a printed wrapper on the outside. The machine was crude and noisy and it frequently broke down but it would wrap the soap, turning out about 40 or 50 cakes a minute.

From this simple beginning rapid strides were made and at the present time intricate wrappings are made by automatic wrapping machines for many different industries. In the soap industry such complicated types of wrapping as are seen in Cuticura Soap and Woodbury's Facial Soap are accomplished easily and rapidly. The soap is inclosed first in a piece of cardboard, then a folded circular and next a single sheet circular, all of which is fastened firmly around the cake with a sticker which is automatically applied by the machine. This package is then wrapped in a printed wrapper which is glued and the soap is discharged, ready to be packed. High speed machines for laundry soap are now available which turn out 200 cakes a minute, wrapping the soap in a double wrapper and gluing the ends.

The chewing gum industry is an excellent illustration of the accomplishment of automatic wrapping machines in making possible such a tremendous production at a low cost. The latest type of gum wrapping machines used by the largest gum manufacturers turns out 500 sticks a minute. The sticks are grouped into packages containing five sticks each. Each stick is wrapped first in foil or paper with a band around it. The five sticks are automatically assembled, wrapped in waxed paper, the seams being sealed by heat, and the completed package wrapped in a printed band. The machine is capable of turning out a ton of gum a day with only two operators. The saving in hand wrappers and in floor space which is effected by this machine, to say nothing of the fact that the machine does the work better and neater are indeed noteworthy accomplishments.

THE tobacco industry has proven one of the largest users of automatic wrapping machines. Most of the well-known cigarette packages are wrapped in transparent glassine paper, which is put on by an automatic machine at the rate of 100 a minute. The same type of machine has been adapted for wrapping packages of smoking and chewing tobacco in wax paper, sealing the seams by heat. Cigarette cartons and cigarette packages are also wrapped automatically.

Perhaps the most difficult of all articles handled by automatic wrapping machines are the products of a large bakery. Packages of crackers, both square and round, are sold in cartons. Generally speaking, the crackers are packed by hand into boxes, then wrapped by machine and finally packed by hand into bundles containing a dozen or so cartons. Recent developments, however, have greatly improved the packing methods, eliminating much of the hand labor by substituting automatic machinery to pack and wrap the crackers.

Such products as tooth-paste, cracker cartons, and shaving cream, which are packed in units of six or a dozen and shipped in cardboard boxes, can now be wrapped by an automatic machine in heavy kraft paper. In this way considerable savings are effected both in hand wrapping costs and in the cost of materials. Bundling machines are used for cigarette boxes, match boxes, baking powder and ginger snaps.

SOFT iced cakes fresh from the icing machine must have some sort of wrapping. When the cake bakers were asked if they would be interested in a machine to do this work they said, "It can't be done". But they were wrong. Practically all of the large cake bakers are now using automatic wrapping machines for their box cake and for cup cakes, wrapping them in waxed paper and sealing by means of electric heaters. The machines handle the cake so delicately that they do not mar the frosting and they wrap evenly and securely the ordinary run of the cutting machines. Plain-wrapped slices sell much better when the wrapper is securely sealed in place. Where the cakes are also to be cartoned by machine it is doubly important that the waxed wrapper be firmly sealed.

For packages which need protection from moisture as well as from dust and dirt, the double wrapping of waxed paper and a printed label is ideal. Tandem machines are available for applying this duplicate wrapping—the packages are fed through two machines instead of one. Waxed paper is applied first and heat-sealed and then the printed wrapper bearing the maker's trade-mark is put on. Tandem units such as these are electrically controlled to minimize supervision.

The industries mentioned above are only a few in which automatic wrapping machines are used. Candy, clothespins, collars and cuffs, face powder, razor blades, shaving cream, toothbrushes and yeast are a few of the others which have adopted automatic equipment as the only solution of their production problems.

The machines for turning out the sort of work already described are constantly being improved. A recent development is a device for controlling the feeding of the paper. On many machines the paper is not fed into place unless a package comes through to be wrapped and this step eliminates unnecessary jams and in many cases means that one less operator is necessary to supervise the work of the machine. On the types used for wax wrapping and heat sealing, thermostats control the hot plates, not so much to conserve electricity as to keep the heaters at a constant temperature. Another automatic device prevents the burning of a package in case the machine stops, and still another throws out the clutch in case there is a jam. Great advances have been made in recent years in developing the sort of wrapping machines that the manufacturers want and the use of machinery of this kind is spreading rapidly throughout the world.

Wax Wrapping of Packages

By A. H. AXBERG

THE wax wrapper cannot be termed an "all purpose" wrapper any more than any other type of wrapper can lay claim to such a classification. In general, wax wrappers are applied to packages containing commodities where it is essential and imperative to maintain the article as long as possible in the same condition as when it was originally packed. Wax wrappers on the outside of packages containing corn flakes, rice flakes, bran, crackers, ice cream cones and many other items, plays an important part in keeping them fresh and crisp. Then we have the other class of merchandise where it is desired to keep the moisture in the package, such as cocoanut, soap powder, bread, cake, salt, etc. There is no need of groping in the dark and wondering whether or not your product will have greater appeal if wax-wrapped There are splendid laboratories now maintained by several companies which will make tests gratuitously and give you unbiased reports indicating whether or not a wax wrapper on the outside of your packaged product would be advantageous.

There are two reasons why the tonnage of waxed papers has increased—first, the manufacturers of waxed sulphite and waxed glassine paper have made progress in making their papers more uniformly transparent and of better quality and strength. There is no longer any resistance to the adoption of the waxed paper wrapper on packages because of lack of transparency. In fact, packages now wrapped with the new types of waxed papers available are enhanced in appearance. Second, careful and definite tests have established the fact that one of the most protective of an all-paper package available is the one wrapped with waxed paper. This is attributable to the fact that the wrapper can be made hermetically tight by the easy folding of the paper and the fusion of wax at the points where the seals are to be made through the use of heat elements. The low costs of the many protective types of waxed papers with their unusual transparency has caused many firms, previously only mildly interested, to adopt the outer wax wrapper. In addition to the protective value of the wax wrapper we find some companies are recognizing the advantage of the seal it affords, eliminating, as it does, pilferage, particularly on packages that are tucked, such as cough drops, potato chips, cookies, etc.

THE consumer already knows that wax paper is a protective medium, but manufacturers have seen fit to spend millions of dollars advertising the fact that their merchandise has the advantage of waxed wrapper protection. The purchaser unconsciously reaches and selects packages carrying waxed wrapper protection, knowing that the package is more sanitary and feeling that any manufacturer who takes the care to so protect his merchandise is, in all likelihood, following out the same care in the operation of his plant. The year just brought to a close found a larger variety of packages on the merchant's shelf wax wrapped than ever before, and the manufacturers of wax paper, as well as of the automatic wrapping machines, are equally responsible for this.

Any returns which a concern secures by wrapping packages with waxed paper is governed to some extent by the manner in which the wrapper is applied to the package by automatic wrapping machines. Wherever possible, it is desirable that the wrapper be so applied

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that the longitudinal seam will not appear on the front or back panels of the package. The wax wrapping machine should always be capable of applying the wrapper snugly to the package to accentuate the transparency of the paper. The care and precision in which the end folds are made have a direct bearing, of course, on the protective value of the wrapper and there seems to be a noticeable difference in the various methods of wax wrapping performed by different types of wrapping machines on the market; therefore, investigation and selection of equipment for wax wrapping is essential.

At the present time the automatic wax wrapping of packages has been confined chiefly to square or rectangular packages. There has been no practical machine developed for the wax wrapping of cylindrical packages. Of course, the wrapping of products such as bread, bars of candy, chewing gum, etc., have been successfully taken care of by concerns specializing in the manufacture of this type of equipment.

THE varied requirements for automatic wax wrapping machines has been a decided factor in the development of four or five models of the same design, but each constructed to take care of a certain range of packages. The improvements on the machine itself have been so steady and rapid that each model, although described as an adjustable machine for the handling of different sizes within its range, when once adjusted to the handling of a specific size, functions as accurately and steadily as a single-purpose machine. The frequence with which the manufacturer of automatic machines is called upon to furnish parts to add additional sizes to the wrapping machine already in use by the manufacturer proves that the adjustable machine is the logical unit to install when selecting automatic wrapping machines, even though at the time of making the selection only one size package is contemplated on being handled.

The speed at which the package may be wrapped with waxed paper is dependent upon the size of the package, as well as its construction. Small cough drop packages are easily handled at a speed of 100 or more per minute; large packages like those holding 100 ice cream cones, measuring approximately 4⅜ in. x 11-3/16 in. x 15⅝ in. can be handled at a speed of thirty-five per minute. The floor space occupied by the four models of wax wrappers varies from 7 ft. x 7 ft. up to 13 ft. x 13 ft. and a one horsepower self-contained motor in each model is ample for operating the machines. A waxed wrapper on the package should not be considered an additional expense, as the amount of money spent for paper, plus the carrying charges on the wax wrapping machine, is easily returned by reason of increased sales, resulting from merchandise delivered to the consumer in a better condition and a considerable reduction in the return of spoiled goods. Certain industries found their radius of distribution limited because the merchandise would not hold up well under transportation and in storage. In this connection wax wrapping machines played an important role by applying a protective wrapper on the package. and extending the time that the product would remain in a saleable condition on the merchant's shelf, increasing sales with reduction in returned goods.

Wax wrapping machines are fully automatic, in the sense that the waxed paper is purchased in rolls, the roll of paper is placed on the machine and the packages are wrapped and delivered, either as a continuing operation from previous machines, or placed in the receiving belt by hand. Safety devices and controls preclude the operation of the machine excepting when there are packages to be wrapped. This reduces the spoilage and permits, when necessary, of an intermittent operation with as accurate results as if the machine was in constant operation. Modern wax wrapping machines are free from complicated mechanical actions. With the safety devices and controls featured in certain units, it becomes unnecessary for a skilled mechanic or operator to be in attendance in order to secure continuity of production. Care should be taken to determine if these features are a part of the unit as they have an important bearing on the daily production and the cost per package for wax wrapping. Certain types of wax wrapping machines apply the wax paper so that the longitudinal and end fold seals are made as tight as the wax paper itself. You wax wrap your packages to make them tight—make sure that the machine you select will accomplish this result.

The annual carrying charges on most wax wrapping machines is less than the salary per year to one girl for hand-wrapping of packages. An automatic machine will in most instances do the work of twenty-five girls. The average machine operation cost for applying waxed paper to a package at a speed of sixty per minute would figure less than ten cents per thousand packages, including interest on the investment, depreciation on the equipment, power to operate the motor, as well as current for the heaters and supervision of the operation of the machine. The wax wrapping machine will wax wrap packages with less spoilage and at a lower mechanical and operating cost per thousand packages than other types of carton wrapping machines. A waxed wrapper on your package is the far-reaching arm saying to the purchaser "Here is our product, made, packaged and KEPT as well as we know how."

Special Machinery

By WM. K. EMBLETON

WHILE in a great majority of instances packers of either dry or liquid goods can readily obtain machines of standard design for their every purpose, every so often a problem arises in the production plant which requires equipment of a special character.

Perhaps the manufacturing process is something radically new for which standard equipment has never been devised. Even where manufacturing and packaging processes are standardized according to modern day practice, there may be some one spot which causes grave concern by reason of its being slower than its correlated processes, so slow that the speed of the entire process is slackened. These slow or dead spots are an aggravation in any packaging plant and means should be taken to eliminate the aggravation as quickly as possible.

This can be done by employing specialists in mechanical problems of whom there are several.

The usual method of procedure with houses of this kind is to lease their engineering and manufacturing facilities at hourly rates to those wishing special equipment designed and manufactured.

Care should be taken to select a firm for the purpose whose reputation is of the highest, and to avoid the many so-called mechanical geniuses who are always willing to build special equipment to be financed by the packer. Most of these mechanical geniuses are adepts in expending money and often leave the packer with nothing but a mass of useless mechanical contrivances which get him nowhere. For this reason be sure that the house employed is one whose background of mechanical achievements and whose financial standing give some assurance that a dollar's worth of success will be forthcoming for every dollar expended.

Labeling Machines

IN the packaging industry today, the labeling machine is by no means the least important part of the equipment used in our modern manufacturing units. They have been developed along with the filling, screw-capping, cartoning and wrapping machines to such an extent that they are of equal importance to the manufacturers for many reasons. Nor is their sphere limited only to the food, drug, chemical, toilet preparation and bottling industries, but they find their way into the cigarette and cigar factory, hardware, hosiery and almost every line where labels are used. Mop and broom handles are still labeled by hand but it will not be long before they will be machine labeled.

Labeling machine manufacture has been developed over a period of many years, and the highly successful machines which are available today have not sprung into being instantaneously but rather have been developed to their present efficiency over a period of years from crude and awkward beginnings. During these years many improvements and refinements have been made until today labeling machines can be purchased which materially shorten the time required for doing this work but which also do the work more neatly and uniformly than it is done by hand.

Some of the advantages of the modern labeling machine are the following: It produces a large output, occupies a comparatively small floor space, labels neatly, accurately and uniformly.

LABELING machines may be classified, first, as semi-automatic and automatic and the latter as rotary, straightaway, and can labelers. The semi-automatic labelers, perhaps the first machines built, were designed for the labeling of beer and similar bottles, but their use today covers almost the entire labeling field. They are in greater demand today than ever because even the small manufacturer believes in machinery for its economy and superior quality of the work performed. The semi-automatic labeler, however, requires an operator to feed each package or container to be labeled. The article is placed into the machine by hand, the label or labels are applied and then the article removed from the machine by the operator. The speed of these machines being limited to 25 to 35 articles per minute or less, depending upon the character of the article and the energy of the operator, led to the development of the fully automatic labeling machine. Nevertheless, the semi-automatic labeler will always be popular and profitable for small production and where short runs of many different sizes and shapes of packages must be labeled.

The automatic rotary labeling machine, which is an outgrowth of the semi-automatic, gums the label and applies it in a similar manner, but it has incorporated conveyors for feeding the articles through the machine without handling by the operator and therefore is much faster than the semi-automatic labeler, attaining a speed of 85 to 90 per minute. A recent important improvement in this type of labeler is the attachment for applying tin-foil around the neck of ginger ale and like bottles. They are furnished by several concerns and are particularly adapted to the labeling of round bottles and jars used in the bottling and food industries as well as some chemical and drug products. They apply on bottles, the body label only, the body and neck label, or the body and neck labels and the tin-foil.

IN one large eastern food factory a battery of six automatic labelers of rotary type are being used. Each machine operates at a speed of 72 jars per minute. The average production per day of 7½ hours is 29,160 neatly and uniformly labeled jars, thus indicating an efficiency of approximately 90%. Each machine occupies a floor space of approximately 4 ft. x 4 ft. for the machine proper and 2 ft. x 10 ft. for the conveyor and is connected to the discharge conveyor from the capping machine so that a completely automatic unit is formed. Only one operator is required whose duty it is to keep the machine supplied with labels and glue, and also to inspect jars and caps before they enter the labeling machine. The goods handled are of high quality with a national reputation, and therefore none but clean labeling and uniform placement of labels is tolerated. There is no record of bottle breakage chargeable in any way against the labeling machines. The cost of labeling has been carefully figured, taking into consideration depreciation, repairs, cleaning, power and other overhead expense as well as the actual labor cost, and the resulting cost of labeling one thousand jars proved to be 34.9 cents.

THE straight-away type of automatic labeling machines which are of more recent design than those above mentioned, go further into the general field of labeling because they can be adapted to sealing or labeling cartons, boxes, wrapped cakes of soap as well as the food, drug and bottlers' products. They have many advantages in the way of speed, accurate registration, cleanliness, adjustability and accessibility. They are built in two standard types known as single and double labelers, both of which types are also furnished in the duplex models.

The single labeler applies one label on one side of the package or container and the double labeler two labels on opposite sides simultaneously. The single duplex labeler applies one label on each of two packages or containers at the same time and the double duplex four labels on both sides of two articles simultaneously. In other words, if these machines are running sixty revolutions per minute, the single will apply 60, the double 120, the single duplex 120, and the double duplex 240 labels per minute although the machine is running comparatively slow which means less repairs and long life.

The duplex labeler is a recent development born of the insatiable American demand for speed and production. In order to keep pace with the filling, capping, cartoning and wrapping machines, all of which are often hooked up with an automatic labeler in a straight-line production unit, it was necessary to get greater output from the labeler without applying the glued label in less time. It requires time to apply glue to the label and more time to make the label adhere properly to the container, therefore the slow running duplex labeler can do a better job than the single machine speeded up which seemingly throws the label at the package without sufficient time to apply it properly.

NO less important is the perfection of another automatic labeling machine for round bottles where the

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name of the product appears in raised lettering on the bottle. In such instances it is an absolute necessity to "spot" the label in a determined position in order that every package will be labeled and look alike with respect to the lettering in the glass. Previously this was done by hand or on semi-automatic machines where the best was a good guess at the proper spot for the label. Some manufacturers have discarded their trade mark on the bottle because of the inconvenience in placing the label accurately and automatically. To bring more forcibly to mind what the spotting labeler can do, just stop to look at the "Vaseline" and "Listerine" bottles in your medicine cabinet. Such bottles can now be adopted where the name of the product is in the glass to tell you what it is after the label is destroyed and with the knowledge that they can be properly labeled by fully automatic machines.

Regarding the quality of the labeling done by hand and by machine, we often hear a manufacturer say that no machine can do this work well enough. Let us illustrate by referring to the labeling of cigar boxes which are perhaps some of the best labeled packages in our show-cases. The labels are beautiful, of many colors, embossed and cut neatly and accurately. Until recently they were applied by hand, which almost ruined their good appearance and lustre. Because—paste was used instead of glue it soaked the label and destroyed the colors. Then it was placed by hand and wiped on with a rag which killed the embossing and smeared the colors. Today the automatic machine applies thin glue quickly, applies the label at once and places it even more accurately than the hand. The result is that the moisture in the glue does not have time to penetrate the label, therefore the embossing and colors remain just as the printer made them.

Incidently, it might be said here that 95% of a cigar box can be made on automatic machines which insure their uniform shape and size just as the machine made bottle is uniform, which requisite is most important for machine handling.

The automatic round can labeler is so universally known that it needs little introduction. It does all that you can ask in the way of speed and quality labeling.

MODERN factory practice has demonstrated the importance of machine production and that manufacturer is wise who leaves no stone unturned to place all of his manufacturing on a machine basis. The use of machinery in the finishing or packing department is as important as in the actual processes of manufacture and the manufacturer who extends his machine methods to these departments is bound to profit more than the one who does not. It is, therefore, well worth while to introduce labeling machinery into a plant even if alterations in labels or containers are necessary to make the work suitable for machine labeling.

In general, a labeling machine can be equipped with attachments to handle a manufacturer's package without alteration but occasionally a minor change in container or label will simplify the work and enable the labeling to be done with a minimum of care. Where new packages or labels are designed it is well for the manufacturer to bear in mind a few simple facts that will enable him to favor the labeling machine and to operate under the most ideal conditions. The best labels are made from thin paper, soft and comparatively light in weight so that they will conform easily to the shape of the container. The surface of the container should be such that the label will naturally follow the contour without wrinkling. A spherical surface is impossible for the label must curve in two directions and will not lay smooth. Where hexagonal, octagonal or similar containers are used the size of the label should be such that the edges of the label should extend well over the corners of the container and on the flat sides to prevent the edges of the label from becoming loose after the label has been wiped on and the container removed from the machine.

The large number of progressive plants employing labeling machines is evidence that the art has been developed to the point where machinery is practical and profitable to use. The manufacturer who avails himself of this up-to-date method of pasting labels is well repaid for his effort to standardize his plant practice.

Scales for Check-Weighing of Packages

By H. D. GINTER

THE human element is responsible for a high percentage of problems in packaging, and any discussion of weighing appliances must take into account the obvious fact of labor—the habits of which follow paths of least resistance. If scales demand of labor the mental effort it will not give, someone gets the worst of it—either the manufacturer or his patron, and to grasp the vital significance of this proposition it is necessary to get before us the simple mathematics that fractional ounce overweights in a multitude of packages cause tremendous profit losses.

A singular condition exists in the business world today relative to scales, an outgrowth of the fact that innumerable weighing devices have been sold all over the United States and Canada by excellent and well directed salesmanship, and a large proportion of that success has been gained on theoretical lines which seemingly had no flaw in the whole scheme of reasoning.

INDULGENCE in theory is a pleasant diversion, but practice belongs to the world of cold and relentless fact. It follows that a scale may satisfy the most advanced theory, but when it is placed in the hands of labor there is a struggle for the mastery between "theory and practice". These "theory" weighing devices would be less the objects of criticism if labor could give the things they demand—skill and concentration in fast, accurate weighing.

Consequently, there is a confessed need for a weighing appliance that will simplify the act of weighing and place precision accuracy within the grasp of any class of labor. Simplify the act of weighing and labor will perform it well; make it difficult, and labor will either give away your merchandise or put your name in bad repute for short weights.

The even balance principle, a basic law for all scale

structure, is no theory—it is existent fact. To develop from this law a scale that will protect both the packer and his customer by visible indication of fractional ounces magnified, has been the success of a nationally known scale industry during ten years devoted to experimental work and to nation-wide surveys.

The scales have revolutionized methods of weighing and the industrial world has responded to this new standard of accuracy in many remarkable ways. Accuracy is found in a dial that instantly visualizes underweight or overweight by fractional ounce indication, so that the operator is constantly warned against weight errors. It means fast, accurate weighing reduced to the last degree of simplicity, and labor performs it easily.

WEIGHING appliances are the all-important fixtures in plant equipment because profits are directly controlled by them. Progressive industry is awake to the fact that merchandise passed over a scale means actually the weighing of money. Comes then inevitable loss in undetected errors which ordinary weighing appliances do not disclose.

Cartoning Machinery

"CARTONING Machinery" or "Cartoners," as they are sometimes designated, include two major types. The first type is, as a rule, called "Inserting Machines," built to form up a folding box and deposit one or more objects therein. The second type is built to merely open up a folding box in such a way that one end is sealed by gluing, or may be tucked, the made-up box passing along usually in an upright position to other machinery which may weigh, measure, or count the contents to be deposited. A modification of the second type consists of a die-cut and scored box which is fed into the machine flat and is made up into a box by means of a forming die and gluing mechanism.

First Type—Inserting Machines.—The speed of such machines is generally between forty and one hundred per minute, depending upon the nature of the objects to be inserted and, of course, upon the quantity desired from the standpoint of balancing with the speed of other machinery in the "line." The larger the carton, and the more complicated and numerous the objects to be inserted, the slower such machinery has to run. In most cases, however, a speed of sixty cartons per minute is possible with the modern machines. It is possible to insert circulars, as well as objects, at speeds up to one hundred per minute without difficulty, provided the proper paper is used. The heavier the paper the less successful the folding and insertion at high speeds.

One operator is required, as a rule, to feed the objects on to a belt or chain, which in turn carries them to a point where they are pushed into the carton already formed. The cartons or folding boxes are automatically fed from a magazine, as are likewise the circulars.

Most inserting machines carry the cartons on their sides where the insertions are made by the machine. Where the object is difficult to handle, the cartons sometimes pass through the machine right side up, or better, on end, an operator actually depositing the object or objects into it before it reaches the point on the machine where the carton is closed.

Inserting machinery can be built to handle tucked-end cartons or glued-end. One end may be glued and the other tucked, if so desired. However, the mechanism for tucking is so different from that required for gluing that the machine itself has to be especially built for either one or the other, and it is not easy to change over after once being built for one or the other types of closing. Consequently this angle should be thoroughly considered before a decision is made to either glue or tuck.

Tucked cartons of either the aeroplane or reverse tuck can be handled, provided the machine is originally built for it. As a rule, there is little preference so far as appearance or cost is concerned. In some cases there is a slight reduction in cost for the reverse tuck, as it may lend itself to a better lay-out by the carton manufacturer. It is well to investigate this before making a decision.

Machinery of this type has come into such common use that the vendors of folding cartons realize the importance of accurate score line dimensions and cut-outs. Nevertheless, they should be checked and approved by the manufacturer of the automatic inserting machine to make certain they are entirely suitable to his particular design of machine. Cooperation between manufacturer of the carton and manufacturer of the machine will prevent much grief from spoilage and low productivity.

Spoilage of either carton, circulars or objects should not exceed a quarter of one per cent if both machine and carton are correct. It should be borne in mind that no machine, no matter how modern or well built, will continue to do good work without a reasonable amount of attention and proper maintenance.

Second Type—Carton Forming Machines.—This refers to machinery which, as previously stated, either forms up a folding box or makes a box from a die-cut and scored piece of cardboard. In the first case the type of box is one which lends itself to use in food products where a tight package is required. Both the top and bottom flaps are generally glued, and very often the carton is later tight-wrapped, or wrapped with a moisture-proof paper.

A relatively inexpensive carton can be used, due to the fact that in case the carton is to be tight-wrapped a decorative wrapper is used, which takes the place of the clay or varnish coat on the unwrapped carton.

The speed of these machines is usually determined by the speed of the standard filling or weighing machines, the latter being built at a speed of either thirty or sixty a minute. The thirty a minute cartoners have been, for the most part, more common for the reason that the other machines entering the "line" have not operated at a greater speed, and it is not, as a rule, considered the best arrangement to have two lines, with one sixty a minute cartoner. More recently sixty per minute fillers have come into use, and it is possible to get cartoners which will operate at a speed of sixty a minute, provided the cartons are not too large. Naturally, the larger the cartons the longer the strokes, and mechanically it is more difficult to build a machine involving long strokes which will stand up for a reasonable length of time.

The carton-forming machines, taking die-cut and scored pieces of cardboard, are used more for shallow boxes having the glued bottom and cut cover. Such boxes are used for carrier cartons, displays, small assembly of articles, and where the folding box does not lend itself by design to the object in view.

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The cartons, which are delivered from the machine with the bottom flaps glued and the top, or cover, open, are packed, as a rule, by hand and the cover closed by hand. The usual speed for these is about thirty to thirty-five per minute.

Considerations for Purchase.—It is, of course, difficult to lay down any rules which will guide one in the purchase of either type of machine, but it might be said that one should estimate the maintenance, labor, power, interest on investment, and compare them with the saving to be made over hand work. Naturally, the volume of anticipated business must be taken into consideration. Unquestionably it is much easier to train an operator on a cartoning or inserting machine than it is to bring the operator up to a reasonable speed on hand work. Furthermore, the machine, as a rule, replaces several rapid hand workers.

The more complicated the cartoning or inserting work to be done, the greater the saving, for the reason that machinery can be purchased today which will insert several items, as well as put circulars and protective pads and liners inside the carton.

Before the purchase is actually made it is generally wise to make sure that the package has been well chosen in every respect, since a cartoning machine, and particularly an inserting machine, cannot be rebuilt without spending considerable money. Occasionally slight modifications in the package can be made without much expense. Nevertheless, it is seldom that a machine is rebuilt without its losing some efficiency, so far as spoilage or output is concerned.

Bag Sealing

PROBABLY nothing has become more intensely interesting than the handling of products in bags.

The cloth bag—burlap, cotton, muslin, etc., are, in a great many instances, giving way to the paper bag.

The paper bags are made in many different ways:

1. The multi-wall bag.
2. The lined bag
3. The valve bag
4. The glassine bag

—and a number of others.

Such products as ore, cement, lime, cereals, coffee, drugs and a host of other products are being successfully shipped throughout the country in paper bags.

They are sealed either by sewing with special stitching machines or by tying with heavy cord or by folding and tapeing, and also by lapping and glueing. They can also be stapled. At present the lapping and glueing method seems to make a perfectly air-tight package.

Machines are made that will automatically fill the bag and then close it under some one of the above-mentioned methods.

It is advisable, when using bags, to be careful to see that the product packed in them is not affected by any chemical ingredient of the paper.

If an air-tight package is desired, the tapeing or glueing methods should be used and the bag closed immediately after being filled.

Tight Wrapped Packages

THE tight wrapped package was first adopted by some of the cereal manufacturers where its greatest advantage was in keeping the weevil from getting into the contents, and this style of package proved so satisfactory for cereals that it has been adopted for use with other products such as flour, soap powders, salt, coffee and almost every other grocery product. Various types of cartons with inside bags or liners can be used with the tight wrapped package. In the salt industries, the tight wrapped package is now being used by many of the leaders and one of the most satisfactory salt packages is a carton of asphalt-lined board which is tight wrapped on the outside. For coffee, wax or parchment paper liners are generally used on the inside of the cartons and the cartons are tight wrapped on the outside. For flour, the regular chipboard carton is used and some of the packers have these made with a blue lining on the inside which gives a whiter color to the flour. Various combinations of cartons, liners and labels can be used to insure the product getting to the consumer in the best possible condition.

One machine which is entirely automatic is built in several different models to suit the various sizes of packages to be tight wrapped, ranging from the small newsstand package up to the five-pound flour package. The average production from the machine is 60 tight wrapped packages per minute. One of the principal advantages of the automatic package wrapping machine is the great saving of labor. In one of the large cereal mills there were employed 75 to 100 girls hand wrapping packages. Two automatic machines and five people replaced this amount of hand labor, and, in addition, the customer obtained a better and tighter package. It is safe to say that the modern tight wrapped package meets the requirements of the packer and the manufacturer, and in these days of rush and hurry, self-service stores, kitchenettes and apartments, the tight wrapped package has a place all its own.

THE tight wrapped package makes use of a plain, unprinted carton manufactured of chipboard or newsboard, and a printed or lithographed paper wrapper glued tightly over its entire surface. The cartons are filled and sealed in the regular way, there being a number of different makes of semi-automatic and fully-automatic carton filling and sealing machines on the market. After the carton is filled and sealed, it is fed into the tight wrapping machine which automatically feeds the paper labels as the cartons enter the wrapping machine, glues the label all over on the blank side with a thin coating of adhesive and wraps it tightly around the filled carton, making a perfectly tight sealed, non-sifting, weevil-proof and attractive package.

This package costs practically the same, or possibly a little more, than the printed cartons and, in addition, there are many advantages in the tight wrapped package which more than offset any slight additional cost. Some of these advantages are—*Better appearance of the package which stimulates sales.* Printed or lithographed colors show up to better advantage on a paper label than when printed directly on cardboard. *Greater strength.* The wrapper glued tightly to the carton strengthens the package especially at the corners where there is generous overlapping of the paper. *Better preservation of contents.* The contents of the package are fully protected against dust, odors, weevil, etc., and there is no loss from leakage or sifting during handling or shipping.

Corrugated and Fibre Shipping Containers

By J. D. MALCOLMSON

A FIBER shipping container is a tough, efficient and economical outer package built to withstand the wear and tear of freight, express and parcel post shipment. It is used for shipping all manner of commodities up to a weight limit of ninety pounds. There are two types of these boxes, both equally popular—the laminated walled "solid fibre" box and the cellular "double faced corrugated" box.

The fibre container is an evolution, partly of the ordinary paper carton, and partly of the familiar corrugated straw sheet, used, among other things, as a wrapper for bottles and incandescent lamps. Corrugated paper itself has been in use for some fifty years as an interior packing and wrapping material. More recently, one face and then two were glued to this corrugated sheet to make a rigid board; but it was not until 1903 that experimental freight shipments were made in boxes built from this combined material. Litigation with the wooden box interests ensued and resulted in a victory for the new package. In 1906 the general use of fibre containers for freight shipments was authorized by the railroads, and this marked the real start of the industry.

Economically considered, the fibre box is an important factor in forest conservation, inasmuch as only about one-sixth of its raw material is new wood pulp, the balance being largely reworked waste paper. This waste paper, moreover, usually contains a fair proportion of old fibre boxes which have outlived their period of usefulness and have found their way back to the paper mill. These savings are in addition to the billions of feet of lumber for wooden boxes that are replaced.

The average fibre box weighs only from two to three pounds, which means a reduction of shipping weight anywhere from 10 to 50 per cent. when compared with the same size wooden boxes. It is shipped flat when empty, and in this form occupies about one-tenth of the space it will contain when set up.

The fibre container affords a very satisfactory means for shipping fragile articles, as well as heavy commodities of relatively small size. Liquids in glass, for instance, are moved in these boxes with a minimum of breakage. The bottles are usually packed in cells formed by partitions of corrugated fibre board. Another method of packing which is in great demand is the "unit carton" system. Articles such as electric irons, lamp fixtures, etc., are placed in an individual carton, which also contains the necessary accessories. A certain number of these cartons, say two dozen, are then shipped in a container, so designed that the contents exactly fill the box. The advantages of this system are that breakage is practically eliminated, the goods are received by the retailer in an attractive condition for displaying on his shelves, and the customer receives the article with its accessory fittings in a convenient and expeditious manner. Many of the larger box makers maintain elaborate designing departments, which are devoted to the devising of new and better methods of packing. The service is usually offered to shippers without charge.

The advantages of fibre containers are as follows:

First Cost—Being largely made from waste products in large quantities, their first cost is relatively low.

Weight—Tare weights are relatively low, resulting in freight savings on shipments as well as on in-coming supplies of boxes.

Convenience—The absence of nails and splinters prevents injury to hands or clothing in packing and invites freight handlers to lay aside their hooks. Its relatively small size, which is controlled by railroad requirements, makes for easy handling in shipment and storage. It is often used as a shelf package and as a "unit package" for delivery to the ultimate consumer without opening and re-packing.

Storage—Fibre containers are delivered flat and are stored in a minimum of space. Approximately ten of these flat cases can be stored in the space occupied by one of them when set up.

Concealed Theft is minimized, as the case, when properly sealed, must be practically destroyed to open it.

Sealing is very economical due to the development of automatic sealing machines which are described elsewhere in this volume.

Advertising—Being a paper product, these cases are susceptible to high grade printing in one or more colors and form a traveling billboard as long as they are in existence.

Sanitary Features—These cases are used new and seldom re-used. Paper linings are not necessary and dust and dirt find no access.

Accuracy—Shrinkage, warping and swelling are unknown.

Conservation—Timberlands are conserved as only a small proportion of the box is new wood pulp, and the discarded box is re-worked into new paper.

Stacking—These boxes, due to the combination of light weight and rigid walls, can be stacked to the roof of most warehouses.

Nomenclature

MUCH time and correspondence is wasted through different ideas of terminology. This is in part due to the rapid growth of this industry which has not had time to evolve a standardized vocabulary.

The following list is by no means complete but it does contain most of the terms which are subject to misinterpretation:—

Fibre Containers. The general term which includes both corrugated and solid fibre cases. The words "Fibre" or "Fibre boxes" are often used to designate *solid* fibre containers, but this is open to misconstruction.

Corrugated Fibre Containers, or usually simply "corrugated cases" generally indicates boxes made of single strength, double faced corrugated board.

Corrugated Board is a general term and may mean any of the grades named below.

Unlined Corrugated is the corrugated paper alone with no "liners" or "facings". It is usually made of .009 in. straw but sometimes is .009 in. chip and unless otherwise specified, is the usual or large corrugation, 3/16 in. in height. It is used as wrapping material for lamp chim-

neys, etc., and has the disadvantage of stretching and thus losing the cushion value of the corrugations. It usually comes in rolls.

Single Faced Board has one liner which may be of straw, chip or jute and usually either .009 in. or .016 in. thick. It is used for inner packing and wrapping and is usually sold in rolls 36 in. wide, 250 ft. long, weighing from 60 to 75 lbs.

Double Faced Board or double lined corrugated, is made with two liners of straw, chip, jute or kraft and is described by the railroads as "single strength". It may be test or non-test board and cannot be rolled.

Double Strength Board is often spoken of as "double double" and "double walled" but the term "double strength" is preferable as this is the designation used by the railroads. It is a combination of double face and single face, having three liners and two corrugations and is from ⅜ in. to ½ in. thick.

Straw Paper or "Straw Board", used for the corrugations, is 100% wheat straw, although rye, oat and rice straw is occasionally used. Strawboard is sometimes imported from Europe, usually from Holland. It is generally made .009 in. thick for corrugating, although .012 in. or heavier is sometimes used for this purpose. Chestnut waste and pine wood fibreboard is also permitted by the railroads for corrugations, but the production of these materials is small.

Chip, or Chip Board is made from mixed waste papers and is usually .009 in. or .016 in. thick. The .009 grade is sometimes spoken of as "rag". Corrugated board with chip liners is usually used for interior packing. Chip is also used for the inner plies of solid fibre.

News, or news board, is made of newspapers and is sometimes used in place of chip, though more expensive. The other grades of box board do not enter, to any great extent, in the making of shipping containers.

Liners are the facings of single face, double face or double strength corrugated board. They may be .009 in. or .016 in. chip or .016 in., .018 in., .023 in. or .030 in. jute or kraft. Solid fibre liners are usually .016 in. jute or kraft. "Liner" is also used to describe the interior packing sheet which lines the four sides of a case and which is usually made of double faced chip or straw corrugated board. This liner is usualy made in one piece with three vertical creases but unjoined.

Jute is really a misnomer, as jute is no longer used in this industry. A "jute" liner is a mixture of new kraft or sulphate fibres and high grade mixed papers.

All-Kraft Liners. These contain no mixed papers but are usually made entirely of sulphate. They are a new development in the industry.

Solid Fibre is a laminated board built by gluing several plies of board together with silicate of *soda* and *is often* referred to as "fibre" or "Fibreboard". (See *Fibre Containers.*) The two outer plies are made of jute or kraft. Solid fibre is usually made in .060 in., .080 in. and .100 in. thicknesses as called for in the Classification, but some .090 in. and .120 in. board is occasionally used for shipping containers.

Single Lined Solid Fibre. This is not often used for shipping containers but is applicable where only a single bender is required and permitted.

Test and Non-Test Board. In this industry, this usually applies to board that does or does not comply with the railroad requirements regarding bursting strength.

Express Stock. The correct name of this corrugated board is *Jute and Chip* which describes its construction. At one time this was acceptable for express shipments. The express rules are now essentially the same as the freight rules except that for most items of less than 35 lbs., jute and chip may still be used.

Mullen or Cady Test. These two instruments register the bursting strength of a board, presumably in terms of pounds per square inch. Actually the results are not exactly in these proportions and for this reason many people refer to the figures as Mullen "points" or "units". Both of these instruments are official as shown in Rule 41.

Webb Tester. This instrument overcomes many of the objections to the Mullen and Cady test by testing the liners of double face corrugated board separately, but it is not recognized as official by the railroads.

Rule 41 is that part of Official Classification No. 4 which itemizes the specifications for corrugated and fibre shipping containers when used for freight shipments.

Rule 18. This does the same for express shipments and is a part of the Official Express Classification.

The Bureau of Explosives, 30 Vesey Street, New York City, issues a hand book containing additional express and freight container specifications for dangerous articles.

Food Administration Specifications. These are the same as the so-called *National Canners Association Specification* and specify higher test corrugated and solid fibre cases for canned goods than are required by the railroads. They are therefore unofficial.

Certificate of Box Maker. This is sometimes known as the "Imprint".

The following list is not complete but covers the most important styles of boxes:

Regular Slotted Carton (RSC). Most containers, especially for freight shipments are made in this style because of the economy of using a straight cut blank. All flaps are the same length and the inner flaps do not meet unless the length and width are the same.

Special Slotted Carton—All Flaps Meet. Also called "Center Special Slotted Carton". This is more expensive as inner and outer flaps are of different lengths, necessitating an extra manufacturing operation with a loss of stock.

Full Over Lap Slotted Carton. Also known as "Full Flap S. C." The length of the outer flaps is the same as the width of the box. The inner flaps may meet, gap or overlap. This style is usually desirable on a long narrow box and gives added strength to any shaped container.

One Piece Folder. This has flaps at top only and is used to pack flat material such as advertising cut-outs for shipment by parcel post or express.

There are a great many other styles of corrugated and solid fibre shipping containers which are illustrated and described in a free handbook issued by the Paperboard Industries Association of Chicago and New York, excerpts from which, with illustrations, are shown elsewhere in the Packaging Catalog.

Bliss Container. This is a patented three-piece shipping container (two ends and a body sheet) that can be made of solid fibre, corrugated or a combination of both. In the No. 2 box, the flanges on the end sheets are stitched to the body sheet, while in the No. 4 box these flanges are part of the body sheet. The No. 4 style is also known as the *Van Camp Box.*

Cracker Caddy. This is a special container. Usually about 10 in. x 10 in. x 11 in., made of a moisture and grease proof board combination. It is occasionally referred to as a "can" or a "Qu".

Silicate of Soda. This is an adhesive sometimes used for sealing containers and always used in the manufac-

ture of corrugated and solid fibre board. Another name is *Water Glass* and it is generally referred to as simply "silicate".

Point. In this industry a "point" is one thousandth of an inch. .060 in. board is spoken of as "sixty point" board.

Height—Depth. These synonymous words indicate the distance between the openings of a box, i. e. from top to bottom. "Height" is preferable as in some industries "depth" means from front to rear. The height of a slotted carton is always the last dimension.

Girth is used in the parcel post specifications and means the distance around the parcel at its thickest part.

Length in these P. O. specifications is the greatest distance in a straight line between two ends.

Nests, or Partitions are slotted half way so that they interlock. A *Divider* is simply a vertical pad with no slots.

Star Cut Pad. This corrugated pad has radiating die cuts and is used to separate large glass objects, such as bowls and illuminating glassware. It is also known by such descriptive and imaginative terms as "rat trap pad" and "pie cut pad".

Die Cut Work is made on a special press and the initial cost of the die and extra make-ready must be allowed for. The ordinary fibre box equipment works in straight lines, at right angles, so that other unusual work must be made on a separate cutting and creasing press.

Crease and Score are used interchangeably but "crease" is preferable as "score" may mean a knife cut, as it does in the set-up box industry. Such a cut score is not used in the fibre container industry.

Joint and Seam. The railroads define "joint" as the result of the operation done by the box maker in taking or stitching the fourth corner of the box; and "seam" as the juncture that is closed by tape in the sealing process.

Bales and Bundles. This refers to Section 4 (b) of Rule 41 and means that items accepted under this category may be shipped in corrugated or solid fibre containers *without* restrictions as to weight or dimensions.

Printing Plates. Solid fibre is printed from brass plates or electrotypes. Corrugated board is printed from rubber plates which are cast from type or from a wood cut.

Rules and Regulations Governing the Use of Fibre Containers in Transportation

IT is essential that shippers as well as box makers be familiar with the regulations. They are too voluminous to remember but one should at least know where to secure the authoritative data. Below is given a summary of the various regulations.

The more or less voluminous regulations covering shipments in corrugated and solid fibre boxes can be grouped as follows:

1.—Freight	4.—Dangerous Articles
2.—Express	5.—Export
3.—Parcel Post	6.—Army and Navy

Many of the details in these rules apply only to the way in which the box must be made, and are not of particular interest to the shipper. Buried in the mass of material, however, are a lot of little jokers that are highly important to him, but it sometimes takes a minute study to uncover them.

Freight—The "Bible" under this heading is the Consolidated Freight Classification No. 5, issued October 1, 1927, effective December 15, 1927—a formidable volume of 500 closely printed pages. This is issued in two sizes—one about the dimensions of a telephone directory and the "photo-reduction edition" about 5″ x 7″ x 1″. You can get either size for a nominal sum by writing to the Official Classification Committee, 143 Liberty Street, N. Y., the Southern Classification Committee in Atlanta or the Western Classification Committee in Chicago. The subscription includes the various supplements which are issued from time to time—also in photo-reduced form if desired. You should look over each supplement and make the necessary corrections in the large volume. A point to bear in mind is that most of the supplements consists of "reissues" and where this word occurs it means that the change has already appeared in a previous supplement so you can skip these lines, if you have kept things up-to-date in the past.

The well-known "Rule 41" of the Classification gives all the rules for manufacturing and sealing corrugated and solid fibre containers and the book also lists all commodities, telling you how each may be packed. Thus, "In Boxes" means corrugated and solid fibre as well as wooden. "Bales" or "bundles" means oversize boxes with no weight nor dimensions limits, provided the case is roped or steel strapped. "Packages" is an undefined term occasionally encountered and is similar to "bales" and "bundles" except that the use of straps is not compulsory; and one item permits the use of .060 Fibre "cartons" without dimension or weight limit. Some shippers like to strap several small fibre containers together to make a single unit. There is no rule against this but each individual box must conform to the requirements of Rule 41. "Wrapped in Fibreboard" is another definition applied chiefly to special forms of packing for furniture.

The commodity list is very complete but some ingenuity is often required to locate your particular item—this in spite of a good cross index. For instance, cylinder blocks, baby carriage bodies and wheel-barrows all come under "Vehicle Parts". Wearing apparel comes under Clothing, but if the goods have not yet been manufactured into wearing apparel, they are listed as Dry Goods, which also includes cotton piece goods, blankets, etc. The committee members, however, are very good about helping you out if you give them a ring or drop them a line.

Shippers are constantly applying for changes in the rules. Such applications are listed from time to time in a published Docket and hearings are later held at the three cities mentioned, to pass on these applications. Very conclusive evidence must usually be presented to effect a change, and "shipping history" plays a large part in this evidence.

Express—These regulations are governed by the Official Express Classification No. 30 issued in November, 1926. This is a small 60-page pamphlet with two supplements to date. Only two supplements are in effect at any one time. Rule 18 describes fibre containers and is modelled very closely after the freight rule 41, the principal difference being that the regular dimension limit is raised from 70″ to 90″ and the specifications for packages under 35 lbs. are much less severe than for freight.

Parcel Post—The post office rules are not as definite as those for express and freight. Form No. 3841 recommends the use of corrugated boxes for a number of listed

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commodities but specifications other than "securely wrapped" are not given. The usual parcel post weight and dimension limits apply. In case of doubt it is always best to submit the complete package to your local postmaster for approval.

Dangerous Articles—These come under the jurisdiction of the Bureau of Explosives, 30 Vesey Street, New York City, and include such items as inflammable liquids, strike anywhere matches, fireworks, etc. The regulations are covered by a 380-page "Pamphlet No. 9" dated December, 1922, and by numerous later supplements This pamphlet is badly in need of revision as the indexing and page numbering systems are very confusing. Moreover, the supplemented changes have now become so voluminous that the pamphlet has completely lost its original make-up. An important thing to remember is that the freight and express classifications list and rate dangerous articles, without any intimation that they require special packing. In case of doubt, it is therefore wise to study the Bureau of Explosives rules first, as the method of packing such articles is considerably more expensive than indicated by the ordinary freight and express rules.

In this classification, an "inflammable liquid" is one with a flash point at or below 80 Deg. F. An immense amount of correspondence back and forth would be avoided if shippers of doubtful liquids would always mention the flash point of their product when making inquiries for shipping containers.

Forbidden Articles—A number of articles are forbidden for all of these transportation methods. These include certain explosives, chemicals and products susceptible to spontaneous combustion.

Export—There are no uniform rules for fibre containers for overseas shipments. Each steamship line makes its own rules and the stringency of these depends somewhat on the intensity of competition at the time the rules are made. The Paperboard Industries Association has done much valuable work in keeping these regulations within reasonable bounds and hopes eventually to help standardize them.

Army and Navy—During the War, the U. S. Army adopted certain specifications for fibre containers to be used in making shipments, particularly of canned goods, to training camps. This was done under the auspices of the Food Administration. At present the Navy has in effect Bulletin No. 65 C 12 effective February 1, 1926, and revised September 1, 1926. This is modelled after Rule 41 and a copy can be secured from the Supply Officer of any of the navy yards.

Conclusion—This set of regulations makes a formidable array but a great deal has already been accomplished in the direction of uniformity. It is to be hoped that this standardization will be kept in mind by the powers that be, when they make future changes or additions.

Patented Types of Fibre Containers

THE passing of the years has seen an almost endless number of unusual boxes, patented, advertised and finally forgotten. Most of these are either impractical or too expensive for the purpose intended. Those in the limelight at the present time are:—

The re-inforced score box—A corrugated container with a strip of tape glued over the score-line, either on the inner liner or inside the board. Three different companies have patents on variations of this idea.

The string opening box—A corrugated container with a piece of string, taped onto the inner liner about 1 in. from the top.

The reinforced tape joint, in which the ends of the tape on the manufacturer's joint is split and tucked under at each end.

The combination fibre and corrugated box having an extra heavy liner on one side.

Burlap-Covered Box—This is a corrugated box with an outer covering of burlap cemented on with asphalt. This box, because of its strength and moisture-proof qualities, is suitable for export use.

Recessed End Box—The ends of this solid fibre box, being recessed, are strengthened by the resulting stitched rim.

Bliss Box

A fibre container designed by the H. R. Bliss Co., Niagara Falls, N. Y. This is a three-piece box made of fibre board—so constructed that the corners are doubly reinforced, which the designers claim are the vital points where resistance against shocks are so needed. It is pointed out that in transit the most severe blows occur at the corners due to the dropping and jolts of the case. To add to its strength at the corners, the double thickness of fibre board is securely wire stitched. This offers rigid support which prevents buckling.

Particular attention is paid to the grain of the board which runs in vertical direction on the side; and on the ends, it runs in the direction best suited to the packing conditions. It is claimed that this combination of grains adds strength and lessens the chance of tearing the end seams in handling. The boxes are closed by wire stitching or can be sealed by an adhesive.

It is stated by the designers that this construction of the box reduces the amount of board used by an average of 10%. The lighter box thus reduces the freight charges. At the same time a strong box is afforded. The containers are well suited for export shipment and bulk goods, the manufacturers state. They are made in any style to fit the particular specifications that the shipper needs.

Machinery has been designed to handle these boxes in both the setting up and sealing operations. This is also supplied by the H. R. Bliss Co.

Sealing

IMPROPER sealing will spoil the best fibre container made, yet an inspection of any freight terminal will show that there are still many of these instances despite the number of words that have been written on this subject. One reason for this condition is that so much still depends upon the human element, especially in the packing rooms of new users and small shippers. In the larger plants, mechanical sealing, which is so rapidly increasing, is doing a great deal to insure correct and efficient closures. The secret of proper sealing is to bring the flaps into contact with each other. Notice the opened flaps of any corrugated or fibre container. The unadhered portions usually have a smooth, glassy appearance, which proves that the adhesive has dried without being in contact with the other flap. Yet a little attention to this point will greatly increase the area in contact. In a series of drum tests of canned goods recently made, less than 1 per cent of 1,300 boxes tested failed through opening of the flaps. This shows what careful attention to this operation can accomplish.

Fibre containers are closed by these principal methods:

Adhesives	Stitches or rivets
Gummed Tape	Steel Strapping
Rope or Twine	

Sealing methods can be divided into three groups, Hand, Mechanical and Automatic.

Hand sealing requires no initial investment, but except for very small production, is expensive and nearly always inefficient. The flaps at one end can be held together with the weight of the contents and the top flaps pressed together by some sort of a heavy weight. A better plan, however, is to have the carpenter rig up a simple stand consisting of a hinged platform over which to slip the box and some sort of cam and lever arrangement with which to apply pressure to the glued flaps.

For greater production, semi-automatic sealing machines are obtainable. Most of these styles are characterized by two endless belts top and bottom, motor driven, which draw the box through the machine. The compression is gained by coiled springs behind each roller. The operation is intermittent, allowing the boxes to remain under compression as long as possible. Lateral pressure is applied as the box enters the press, insuring the close abutting flaps which are so necessary to a well sealed container. One man seals both ends of the container in one operation.

This labor saving is quite apparent when compared to hand sealing of bottoms and tops separately. Excessive handling is eliminated because the containers move away from the packing end of the machine. Roller conveyors can take the sealed containers direct to the freight car or warehouse, as shown in the accompanying illustrations. These machines have varying capacities, depending on the length of container, size of sealing press and nature of contents.

THE modern full automatic sealing press has been so perfected that it will seal from 50 to 1,500 cases an hour, depending on conditions. One of the large soup canners is regularly putting 1,500 heavy cases an hour through this machine and a glass company has even reached a figure of 1,800 per hour, although these are light weight cases carrying empty glass bottles and jars.

It is an unforgettable sight to see one of these container sealing rooms operating with no attendants in sight and yet turning out better sealed cases than is possible by hand. The cases are packed with the bottom flaps simply folded into place. They then roll on a gravity conveyer to the front end of the automatic machine where they are permitted to enter one at a time by a positive timing device.

The top and bottom outer flaps are then automatically folded out and coated with a thin even film of adhesive, after which they go back into place without disturbing the contents. They then traverse a compression unit similar to those already described. An ingenious attachment causes the adhesive to be applied only where the inner flaps will come into contact, thus insuring that none of it will touch the contents.

Many "tricks of the trade" have been evolved by practice but have not found their way into print. For instance, double strength corrugated boxes can be sealed very efficiently if the corners of the outer flaps are folded or broken down slightly before sealing. This allows the corners to come into contact when under pressure. Otherwise double strength board is hard to seal efficiently as the corners do not stick and are liable to be hooked loose in later handling.

Hand sealing is less awkward if one outer flap is held down at an angle of about 45 degrees, which keeps the inner flaps flat and in position to receive the adhesive brush. Use a large brush, say 4 in. Hand sealers in in one plant were observed using a small brush and taking from 10 to 12 strokes to apply the adhesive to one end. Instruction and a larger brush reduced this to two strokes—a small matter perhaps, but quite a saving in time in a year.

Warping often causes trouble in sealing due to loss of contact. Containers should not stand around longer than necessary before packing and sealing because atmospheric conditions may warp the flaps. They should be left in the original bundles until ready to use, or at any rate, kept in large storage stacks.

The hardest box to seal is one whose contents do not fill the box and there is nothing to "seal against." Sometimes turning the box upside down lets the contents aid in securing contact of the top flaps.

Stitching

STITCHING the flaps together is an important method of sealing corrugated and solid fibre containers. There are many different types of stitching machines such as those used for making books and set-up boxes. These are usually manufactured by the makers of shipping case stitchers and it is only these latter styles that we are concerned with here.

Stitching Methods—Possibly 95 per cent of all stitched containers are solid fibre. Corrugated board because of its resilient nature is more amenable to tape or adhesive sealing although a great many stitched corrugated boxes are shipped every year. The usual practice is to stitch the bottom flaps of corrugated or solid fibre containers and to glue the top flaps. Such a box has many advantages. In the first place it is often difficult to glue securely the bottom flaps of an empty container unless one is equipped with a proper bottom sealing press. In such instances the top flaps of the packed box can be easily sealed by applying adhesive to the flaps and then rolling the box over so that the weight of the contents will give the necessary sealing pressure. The empty box with the bottom flaps stitched up forms a convenient tray or container for transferring from one department to the other during the packing operation. In this form it is also used as a "re-shipper" for carload shipments of empty bottles or cans from the glass factory or can maker to the purchaser of these inner containers who then uses the same boxes for his own shipments.

Stitching machines occupy such a small space that they can be placed in advantageous positions near the incoming box.

Storage—Boxes can be bottom stitched only as required thus saving space. Many large shippers use this system although others who formerly did have adopted the automatic adhesive method of sealing top and bottom flaps simultaneously.

Stitching is more nearly "fool proof" than any of the other closing methods as each stitch is a positive joining of the flaps. Female help or inexperienced operators can be used, and no "setting time" is necessary; nor is tape needed.

Stitched cases are generally used where it is necessary to open and re-seal the case in transit. Thus, shoe jobbers often have to change the assortment of sizes before sending the box out to the dealer. In such cases the stitches can be withdrawn by a screw driver and replaced with a top stitcher.

Styles of Boxes Used—Most stitched containers have

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an overlap on the outer flaps of one inch or more and this is required if the small flaps are over six inches apart (a one inch overlap means an extra one-half inch added to the blank and this extra material cost must be taken into account in any consideration of relative sealing costs). If the box is over sixteen inches long it should have a two inch overlap. One row of stitches down the center of the flaps, is required on an overlap box. If no overlap is used, two rows are necessary here.

The large flaps are usually stitched outside but often the small end flaps are out. This latter makes a stronger box for certain commodities such as canned goods where the cutting action of the can chime is most apparent at the ends of the case. Some shippers have the box maker's certificate printed on both large and small flaps so that either can be used as outers. Occasionally the "criss-cross" method is used—one short slap outside and the other inside.

Style of Stitching Machines—There are two main types of stitchers, bottom sealers and top sealers—combination machines are also made which will do both. The bottom sealer, which is the most important, consists of a metal post about 40 in. high which acts as the anvil for clinching the stitch. This post is hinged at the bottom. Stitchers usually occupy about 5 square feet, weight 500 or 600 pounds and cost about $400 or $500 when motor driven. This motor need only be about 1/6 H.P. and operates from the lamp socket. Some types are belt driven. The average stitcher will drive from 200 to 300 stitches a minute and is quickly adjustable to stitch thicknesses of from 1/32 to ½ in. Small variations in thickness are automatically compensated for. The machine is actuated by a foot treadle and the action includes drawing the wire from the spool, cutting it, forming, driving and clinching the stitch. The stitch is formed on a mandrel and the size of the clinch is adjustable. An experienced operator can bottom stitch from 1,500 to 2,000 cases a day.

The general form and method of using these machines are as follows:—The folded boxes are opened and squared up by the operator. The supporting post is drawn back by the treadle for insertion of the box. Another treadle actuates the stitching which is, automatic, allowing all of the operator's attention to be concentrated on the location of the stitch. On some makes, this supporting post swings sidewise so as not to interfere with the operation and the treadle can also be folded up out of the way when not in use. Replacements and adjustments have also been greatly simplified in recent years.

Top stitchers have the same mechanism as bottom stitchers but use a blade anvil in place of the post. This looks like a sword with the flat side up. The end of the box nearest to the operator is first partially stitched. Then the box is reversed and the opposite end completely stitched. The first end is then finished up as the blade is withdrawn. This means that the last two stitches cannot be within 2½ in. of each other and the Classification, therefore, makes allowance for this condition. The filled box is supported on an adjustable table usually equipped with movable balls for the easy reversing and moving of heavy cases. Stitcher sizes are described by the dimensions of the head. For instance, a 20 in. head type top stitcher will probably stitch boxes up to 16 inches in length and a large 30 inch type will take a box 27 inches long. These are with no overlap. With an overlap, boxes of almost any reasonable length can be stitched.

Combination machines have a removable post, folding blade and swinging work table and are useful where a shipper desires to stitch both tops and bottoms of his fibre containers, but does not have a large enough output to warrant the purchase of two separate machines. They have a capacity of 400 to 500 cases a day.

Stitching Corrugated—The earlier types of stitchers were not very successful on corrugated as they crushed the board too much and the stitches had a tendency to pull out. This type of sealing now gives no trouble due to several improvements, such as pointed stitches inserted at an angle and so clinched that the points are driven into the board without crushing the corrugations. This gives a positive lock and has even been used successfully on double strength board. This burying of the clinch (even on solid fibre) prevents the wire from damaging or rusting the contents. Bottom stitching only is used for corrugated boxes.

Wire—This is usually "copperized" box stay wire calipering from .017 inch to .020 inch and runs from 1,800 to 2,100 stitches per pound. Figuring the wire at from 8 to 10 cents a pound the cost for stitching is from $1.00 to $1.50 per thousand boxes. The wire comes on wooden spools and many large shippers use aluminum spools on the machine. The wire is made of iron with copper colored lacquer coating which is not always rust proof. For this reason galvanized or tinned wire is sometimes used. Solid copper has been experimented with but the cost is prohibitive. A round, tinned wire has recently been put on the market which has the advantages of being rust proof and strong yet very economical because of its lighter unit weight. Wide wire, ribbon shaped, is often used for sealing corrugated boxes and some of these staples have been observed one half an inch wide.

Other Uses—In addition to sealing one piece boxes, stitchers are used in this industry for making up telescope boxes (including suit boxes) assembling 3 piece containers such as the Bliss and Van Camp styles and for sealing bottoms and making up the covers of the popular moisture proof cracker caddy. Essentially the same styles of machines are also used by the box maker for stitching the "manufacturer's joint".

Metal Strapping

THE application of metal strapping to fibre containers is a relatively new development and was started by a short clause written into the freight Classification within the past few years. The principal uses of metal strapping on fibre containers are:—

1. Bundles and bales as defined by the freight classification.
2. Packages composed of several light weight outer containers strapped together.
3. Packages with heavy weight contents where the bursting thrust is excessive.
4. Packages to be safeguarded against pilferage.
5. Odd shaped containers.
6. Export boxes.

There are three principal steel strapping systems applicable to fibre containers. The straps are tightened and sealed by various methods. Omitting the technicalities of these methods as outside the province of this article, it will suffice to say that the ends of the strap are usually clamped together with some sort of separate metal seal. This seal can often be lithographed with the shipper's name or embossed with his package number, thus affording a positive identification and seal. In one make the straps when crossed can be sealed at the intersection in an interlocking combination which prevents side slip-

ping. Some makes have separate tools for applying tension, crimping the seal and cutting the strap. At least one style does all these operations with a single tool. Perhaps the very latest development is the use of spot welding for joining the ends of the straps, in place of crimping with a seal.

As regards the strap itself, many experiments have shown that ⅜ in.-.015 metal is best for fibre containers. Straps less than ⅜ in. in width have a tendency to cut through the board and the gain in this matter from using greater widths than ⅜ in. is not commensurate with the increased cost. The straps naturally cannot be applied as tightly as in the case of wooden containers, but should be tightened just sufficiently to bite into the edges, so that they will not slip sideways. This, by the way, is the big disadvantage of cord.

When the contents are of a hard, solid nature, the strap should, of course, be drawn tighter than in the case of loosely fitting or fragile contents, as this serves to tie the contents together in such a way that they will resist a surprising amount of rough handling, even after the container itself has started to break. Where the contents are of a fragile or yielding nature, it is often worth while to slip buffers of corrugated or fibre board under the strap at the edges.

FIBRE containers are usually sealed with adhesive or tape, or both, before applying strapping. Strapping alone can be used, however, especially when the outer flaps have plenty of overlap and the contents are solid and firm, such as canned goods. The use of wax seals on valuable contents, such as silverware, can also be dispensed with when straps are used.

The regular slotted carton style is often strapped but it is usually preferable to have the outside flaps made with a 1 in. overlap. This is particularly true if no adhesive is used. Long boxes opening at the ends, (such as for automobile bumpers), should have a full overlap. Another popular style is the "full telescope", as the depth can be varied while the straps will still keep the contents from shifting. The three piece box is also well adapted to strapping. The body of this box consists of an open-end tube and the ends are formed by telescope covers extending two or three inches over the sides. If necessary the depth can be varied by cutting down the body. Two crossed metal straps provide all the sealing needed.

Often several relatively small corrugated or fibre containers are strapped together to make an easily handled shipping unit, to give added protection to fragile contents or to reduce transportation costs. For instance, one of the branches of the General Electric Company receives solid carloads of lamps from the factory and re-ships these in smaller lots. Many of these corrugated boxes only weigh from three to six pounds each.

The minimum weight for express shipments is ten pounds. By strapping several of these boxes together, expressage is paid only on the actual weight shipped. Several sizes of boxes are often strapped together and "lot shipments" arrive at destination intact with no lost sheep "to follow". Because of the light weight, no wooden ends nor fibre buffers are necessary. Two straps, crossed, are used.

Dead weight articles, such as bolts and nuts, are always expensive to pack. When dropped, the box often breaks with explosive force. Metal strapping is a valuable reinforcement in such instances.

Concealed losses due to pilfering run into large sums annually, although very marked reductions in these losses have been made during the past few years and much of this reduction is due to the use of sealed metal strapping.

Many objects are difficult to pack because of their odd shape and when packed it is sometimes difficult to seal the container and to deliver it to destination in good condition. In such cases the proper use of steel strapping often solves the problem.

Automobile bumpers are usually shipped in long, narrow, solid fibre containers either end-opening or "five panel wrap" style. Both of these are difficult to seal with the usual methods and for this reason metal strapping is nearly always used to close these packages. When drawn up tight, the straps keep the heavy bumpers from punching through the ends of the package.

The export field has so far been very little touched by corrugated and fibre boxes, but it is undoubtedly destined to play a big part in the future of the industry. One of the chief things that has retarded this development has been the attitude held by the steamship lines that the domestic type of these packages is not sufficiently rugged to withstand overseas shipment. Also the steamship companies lack the uniform classification standards that have been developed by the railroads.

With the increase of competition among ocean carriers, however, definite rules will soon have to be laid down regarding such shipments. Doubtless, these rules will include the use of steel strapping.

Gummed Tape

IF there is one subject on which the public, from box manufacturers and tape mills to shipping clerks and packers, need instruction, it is on how to get proper results from sealing tape. Many mistaken notions are prevalent. The result is that many shippers get better results from sealing tape than from any other form of closure, while there are other concerns whose taped packages are not what they should be.

To make taped fibre shipping cases safe, it is of utmost importance to make the gummed tape stick tightly. To do that the tape must be *correctly moistened*. Unfortunately, this important factor of tape moistening is often neglected in shipping rooms and also by those higher up, who do not realize its value in preventing damage to or loss of goods in transit.

When a strip of sealing tape has been applied to a carton or package, it should stick so tightly that it becomes practically a part of the container itself. Moreover, the tape must stick over its entire surface, not just in spots here and there; as that would seriously weaken the package.

To accomplish this is easier said than done. Devising a machine which will invariably deliver strips of tape moistened just right, and over the entire surface of the tape, has proven to be far more difficult than was at first expected.

Let us consider a moment what a good tape moistening machine must do. During rush hours in shipping rooms, packages and cases are sealed at top speed. Each lineal inch of tape touches the moistening element about one-fortieth of a second of time. The "first time over" must do the job correctly or not at all. The tape is slapped on the carton, rubbed with one or two quick motions,—and in that brief instant it must grip tightly enough to hold the container, if necessary, during a trip across the continent. The box will not stand quietly on a shelf for several weeks but will get rough handling. The crushing and scraping in transit frequently pulls nails out of wooden shipping cases, yet tape must not work loose. It must *stay* stuck.

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Some shippers do not realize that tape can stick for a few hours and look perfectly secure, and then suddenly give way. This trouble is usually the result of moistening the tape only in spots or it may be caused by overwetting of the tape, or not moistening it enough.

The safest plan is to use only thoroughly reliable tape dispensers. The best machines are those which eliminate the human factor from moistening entirely, making the operation of the moistening unit of the machine entirely automatic.

NO matter what type of moistening device a shipper may choose, the main thing to remember is the great importance of the moistening operation in making a safe shipping container out of a corrugated box or the paper wrapper, as the case may be. The value of the merchandise and ordinary corrugated box runs from $1.00 to $20.00. Moistening the tape can never cost more than a tenth of a cent, but that fraction of a cent can make all the difference between losing the $20.00 merchandise or having it arrive safely and in good condition at its destination.

The glue of various brands of gummed tape varies, especially as regards solubility. A little study will show the proper amount of moistening for any one make. Too much water may remove a very soluble glue and lead to blisters, while not enough water may fail to soften a harder glue. Some tapes have such hard glue that complete immersion works best. Only first class moisteners should be used. Heavy Kraft paper tape, while strong, is stiff and difficult to adhere properly and thoroughly. A very thin tape is more fool proof but weaker. For these reasons gummed cambric makes a wonderful seal besides being very resistent to tearing and friction. However, it can easily be peeled off by a thief and a fresh piece replaced so for this reason the railroads have recently forbidden its use in sealing. Well adhered Kraft cannot be removed without tearing.

Springy flaps will cause tape to slip a little before the glue has set, resulting in looseness and wrinkled tape. This can be overcome by first folding the flaps inward or by holding them down hard until the glue has set or can be done mechanically by slipping the freshly sealed box under a home-made adjustable wedge shaped board or frame which will hold the flaps of one box down until it is pushed on by the next box.

Many packers run the tape 6″ down the ends of the box or even all around. The Classification calls for 2½″ and if properly applied this is enough. We recently observed a shipping room putting an average of 6″ of 3″ tape down the ends of the box and turning out 200 boxes a day. Reducing this to 2½″ made a saving of $435 a year. In most cases, where 2″ tape is indicated under the rules, this width properly applied is ample.

Many shippers use tape and adhesive together when the latter is sufficient to meet railroad requirements. From a carrying standpoint adhesive alone is ample but the extra tape may be worth while as an identifying seal or as insurance against inefficient labor. One firm made a saving of $2,230 a year by omitting this extra tape which was being used through ignorance of the Classification requirements.

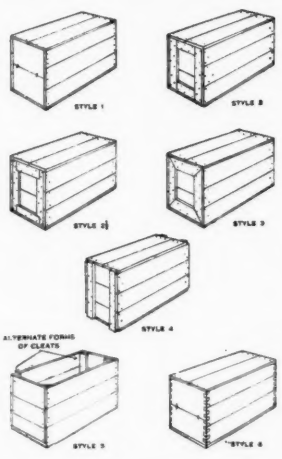
An occasional visit to the shipping room by one experienced in such matters is well worth while, as he can often point out economies and can compare your procedure with the Classification requirements which are often quite complicated. This is especially true in the case of relatively small companies or those who have only recently adopted the fibre container.

Wooden Boxes

THERE are seven forms of nailed wooden boxes so universally used that they may be called the standard styles of nailed boxes. These boxes can be adapted to a wide range of uses, and it is the experience of the Forest Products Laboratory that in meeting the majority of packing problems they are the most efficient of the nailed boxes. The advantages and disadvantages of each style, as revealed in laboratory tests and observations of boxes in commercial service, are given below.

In style 1, the grain of the ends and sides runs approximately parallel to the top and bottom surfaces. One of the common failures in this type of box is splitting of the ends and sides, or failure of the joints in these parts, since the only resistance to such failure lies in the strength of the joints, if present, or in the strength of the wood in tension across the grain, which is not large and is extremely variable in any species of wood. The smaller holding power of nails driven into end grain as compared with side grain is another source of weakness.

To improve on style 1 ends, and guard against the liability of complete failure from splitting of ends and sides, rectangular and sometimes triangular corner cleats nailed or stapled to the inside of the end (style 5) are added when the character of the contents permits. This construction does not increase the displacement of the box and is, therefore, not objectionable in that respect. If these cleats can be made large enough, the sides may also be nailed to them, which, of course, increases the strength of the nailing at this point. These inside cleats should be shorter than the inside depth of the box, so that if the sides and ends shrink, the cleats will not cause an opening of the joints. In all boxes with cleated ends, the nails or staples holding the cleats to the ends should be long enough to permit a good clinch, and should be spaced approximately the same as the nails in the adjacent edges of the box.



The most common method of preventing box ends from splitting and of supplementing the holding power of nails driven into the end grain is the addition of two outside cleats on each end as shown in style 4. These cleats should be of the same thickness as the end, so that when setting up the box the same size of nail may be used in them. The nails should be staggered in the ends and cleats; this permits a closer spacing of the nails and results in a stronger joint than is obtained by driving the nails in a single row. The holding power of the nails is supplemented most effectively by the use of denser woods in ends and cleats.

THE cleats in style 4 boxes should be long enough to come nearly flush with the outer surfaces of the top and bottom. They will thus aid in keeping the top and bottom in place and will also take some of the thrust which comes on the nails in the top and bottom when the box is dropped on a corner. If the cleats are made to come exactly flush with the outer surfaces of the top and

bottom, and shrinkage occurs later, it may cause the ends of the cleats to project beyond the top and bottom, and they may be pulled loose if the box is handled so that they catch on some object. The amount that the cleats should be cut short to allow for shrinkage depends on the moisture content of the lumber at the time the box is constructed and the storage conditions afterward. Usually an allowance of from ⅛ to 3/16 inch at each end will be sufficient.

The addition of the two horizontal cleats in styles 2, 2½ and 3 permits a reduction in the thickness of the end boards from the thickness of the cleats to that of the sides, top and bottom, in which case all the nails should be driven into the cleats. Or the cleats and end boards may be the same thickness and the nails staggered in two rows. The usual failures in these styles of boxes are pulling of the nails from ends and cleats, shearing out of the nails to the ends of the sides, top and bottom, and splitting of the end boards along the inner edges of the horizontal cleats, which allows a cleat with part of the end board to pull away with the top or bottom. The resistance to failure by splitting of the end is due to the strength of the end board in tension across the grain, supplemented by the action of the vertical cleats. In nailing or stapling the vertical cleats to the ends in styles 2 and 2½, it is possible to get more nails near the top and bottom edges of the box than in the mitered cleats of style 3. This more effectively prevents the box end from splitting along the horizontal cleats.

Style 2½ has the advantage that when the bottom and top are being nailed to the cleats, the notches or steps in the vertical cleats will take the thrust that otherwise would come on the nails holding the horizontal cleats. This thrust is sometimes very severe, especially when several nails are driven at the same time into a cleat made of dense wood.

In manufacturing boxes with square ends, style 3 has the advantage that all four cleats are the same length, hence interchangeable. When a very symmetrical end is desired, rather than the strongest end, the mitered cleats are preferred.

The box shown in style 6 has sides and ends joined together by a series of tenons, called "locks," which interlock and are held together by gluing. The top and bottom are usually fastened by nailing. The lock corner, if properly glued, gives a more rigid box than nailed corners, there being no appreciable distortion before failure occurs. Tests show that many failures in lock-corner boxes occur because ends and side split, nails pull from or split the edges of too thin ends, locks open, and matched joints lack sufficient strength.

The Plywood Box

PLYWOOD is a combination of two or more thin sheets of lumber glued together, with the grain of one ply at right angles to the adjacent face or faces, and therefore tends to equalize the strength parallel and across the grain. For that reason the thickness of the lumber used in the body of the box may be reduced as much as 75 per cent without any loss whatever in its serviceability.

Lumber does not shrink with the grain, but across the grain. It shrinks about 8 per cent from a green to a dry condition. If dry and subjected to humid conditions it swells. The shrinking or swelling of plywood in length and width, due to the cross banding of the grains, is so minimized that it is of no consequence and the warping and twisting of the plywood panels in boxes is eliminated.

Plywood adds to the complications of manufacture of wood boxes. Thin sheets of veneer of a predetermined size are cut from logs on very powerful lathes. This veneer is then kiln dried in large kilns which operate continuously night and day. The material is next taken to the gluing-up room, where glue is spread upon the surface by a mechanical spreader. The glued veneer sheets are then placed in a hydraulic press with heavy three-ply oak boards inserted between each of several layers, and a heavy pressure is applied. This pressure holds the panels perfectly flat and is maintained for a period of hours by the use of turn buckles and I-beams applied while the wood is in the press. After the panels are thoroughly dried, they are trimmed to the desired size and are either nailed by nailing machines or stapled by large staplers driving long metal staples through the veneer into the reinforcing cleats. The ends of the nails and staples are clinched. The cleats may be of hardwood or softwood, depending upon the desires of the customer and purpose for which the boxes are to be used.

Plywood boxes may be made in a great variety of styles. Each box part is marked, indicating whether it be the end, side, top or bottom, and as each box part is complete, there are but six pieces or parts to be nailed together, thus simplifying assembling.

Plywood may also be used in wirebound boxes or in hinge corner boxes. There is no box material having greater strength per pound of weight, and because it is made in large sheets, which can be so cut as to make each box part of one piece, a more nearly moisture-proof and dust-proof package results.

The thicknesses most generally used are 3/16 inch and ¼ inch, these being substituted for lumber up to 1 inch in thickness. It is possible, however, to make plywood in greater thicknesses or more plies than three, where conditions require.

The uses of plywood boxes are infinite. Plywood cases are used for cottons, woolens, prints, worsteds, blankets, yarns, hosiery, underwear, silks, gloves, corsets, shoes, buttons, soap, confectionery, silverware, rubber goods and wherever a wooden box is required. The full cleated case illustrated is particularly adapted for the shipment of cotton, woolen and knit goods, carrying as much as 1,000 pounds. Special cases are made for talking machines, tires, silverware, boots and shoes, hats and other articles.

The Wirebound Box

The wirebound box is a container made from thin material, usually lumber, bound with two or more strands of steel wire and stapled or nailed to a strong framework of wood. This box, in its knocked down form, consists of only three separate parts, the box-blank and the two ends; the box-blank, or mat, comprises the consecutive faces, top, side, bottom, side, connected only by the continuous steel binding wires.

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Acme Silverstitch, the galvanized stapling wire, is made in three thicknesses: .017, .020, and .023.

It is manufactured by an exclusive process which permits greater accuracy in temper, width and thickness than has heretofore been possible in stapling wire. The galvanized finish will resist rust longer than the ordinary copper wash finish.

Silverstitch is wound in five and ten pound *continuous* length coils. The ten pound coil is widely used because it reduces time spent in changing coils and threading the machine 50%.

A free sample coil of Silverstitch will be gladly sent upon request to stapling wire users who would like to test it in their own plant.

NAILLESS STRAP EQUIPMENT:

Acme Nailless Strap is fast, efficient, and economical for the reinforcement of all types of packages. The Acme Seal is the strongest that it is possible to secure

Sealed Sample, Acme Nailless Strap

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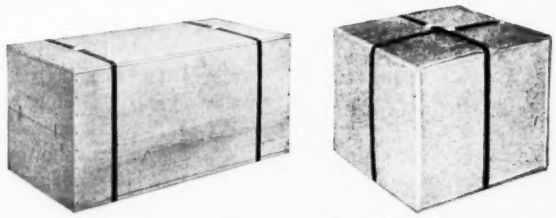
The Acme Method increases the efficiency of the container, insures security in transit and safe delivery. In many cases it makes possible marked reductions in the thickness of container material, thereby reducing freight cost as well as package costs.

Manufacturers shipping in small packages can save



Nailless Strap applied to wood and fibre boxes

money, in many instances, by strapping several packages together to secure a different freight classification and a lower rate.

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Catalog No. 26 shows many ways to cut shipping cost. Sent free on request.

WELDFAST STRAPPING MACHINE:

Acme Weldfast Joint
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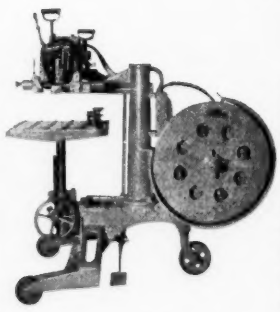

The Acme Weldfast Strapping Machine provides the fastest and most efficient means for the application of flat strap. Semi-automatic in action, it tensions the strap very rapidly and electrically spot welds the overlapping ends. This welded joint is fully 95% as strong as the strap.

One man can single strap 1,600 to 2,000 standard size packages a day.

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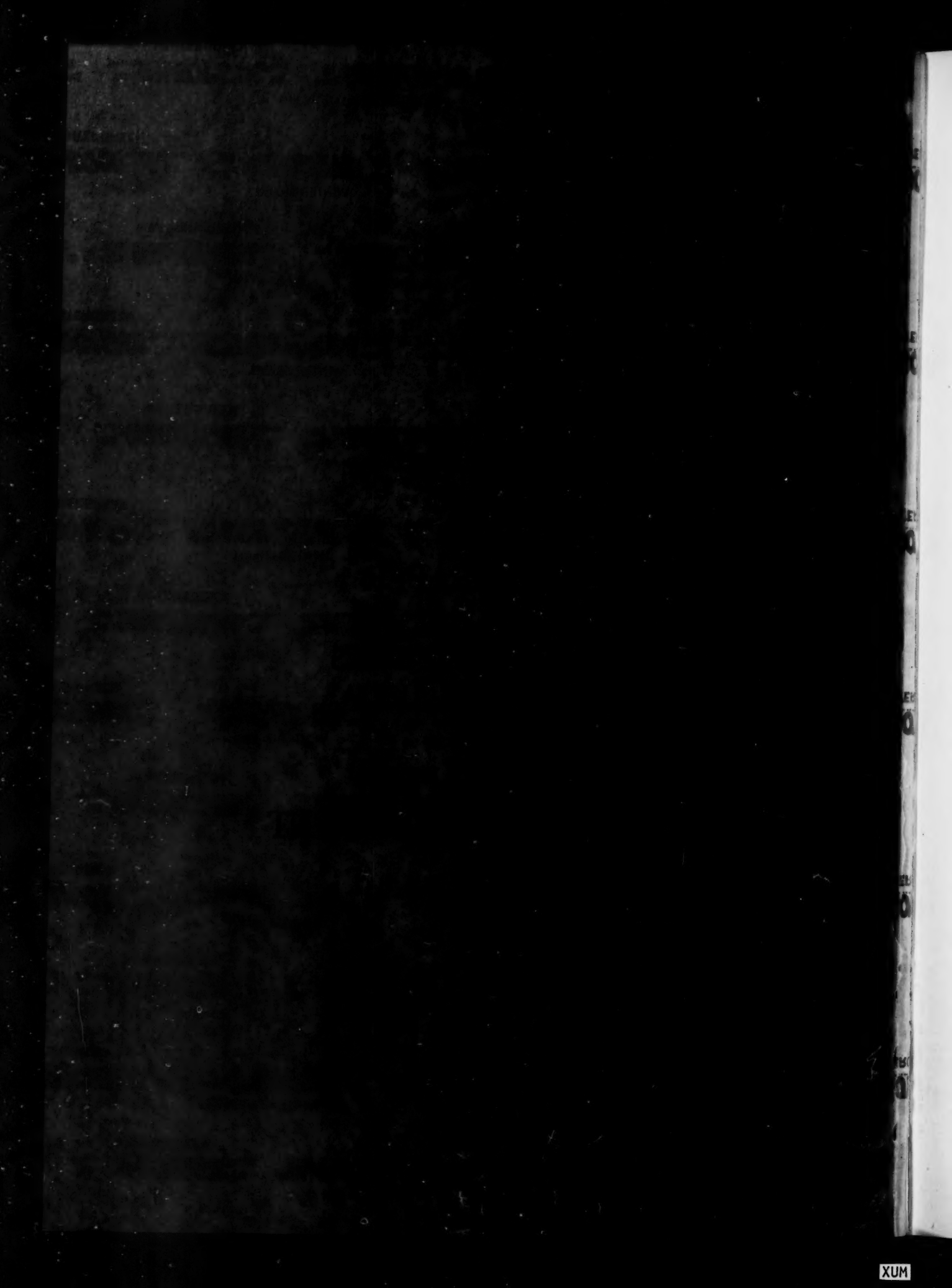

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Envelope Filling Machines (powders, bandages, powder puffs, samples).

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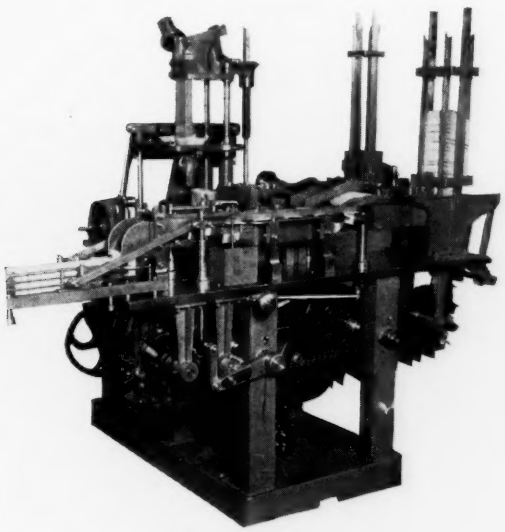
PACKING MACHINES:

This Company leads the field in the production of single machines which make complete packages. These



Packing Machine

machines perform the following operations: Weighing or measuring the product; forming, filling and closing a bag; inserting bag and booklet in automatically erected carton which may be closed by sealing or tucking.

The machines make 35 to 70 complete packages per minute, depending on the nature of the product being handled.

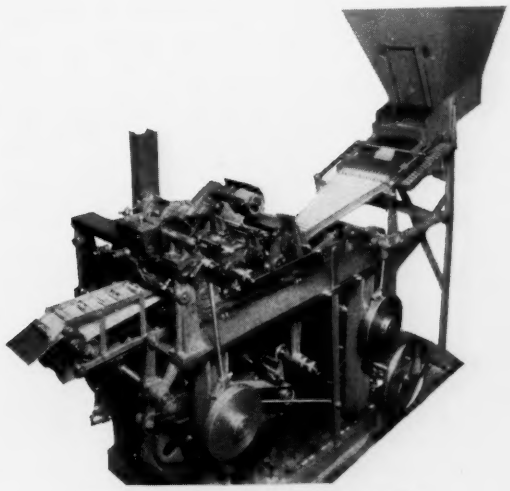
Requiring but one operator, driven by a ¾ H.P. motor, they are compact units which have been adopted as standard equipment by several nationally known food packers.

Packages made on this machine include Jello, Tetley's Tea and Royal Gelatine Desserts.

WRAPPING AND LABELING MACHINES:

The machine illustrated takes the required number of pieces from a hopper, wraps them in foil or waxed paper or both and labels the package.

Other machines of this type are used for wrapping cylindrical objects such as bottles, tubes, candy pieces in plain or waxed paper, cloth, foil or cellophane.



Aligning Foiling and Labeling Machine

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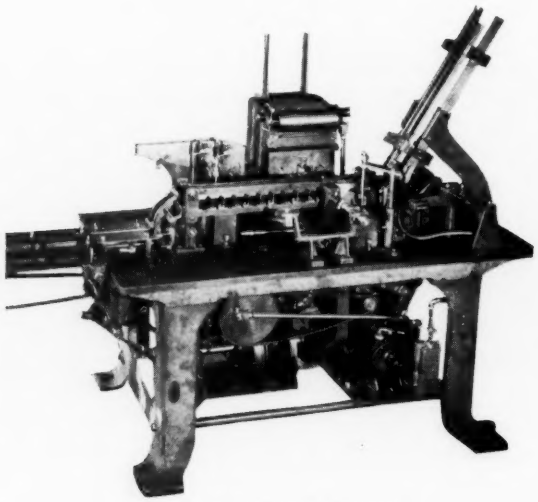
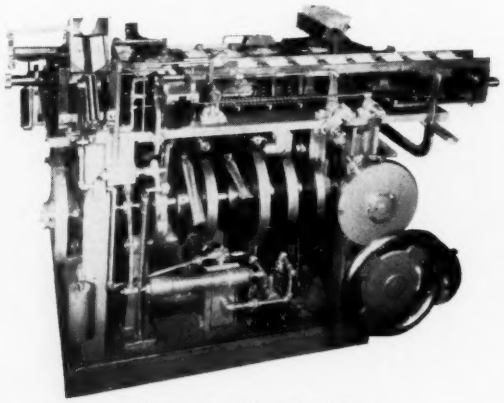


Adjustable Cartoning Machine

CARTONING MACHINES:
(Adjustable and Single Purpose)

Anderson Cartoning Machines are used in cartoning jars, bottles, candy pieces, yeast cakes, rubber heels, collapsible tubes, dry cell batteries, rolls of absorbent cotton, bandages, etc.

These machines can be built to handle one, two or three different size cartons. Mechanisms may be added for including in the carton one or two circulars, paper liners and one or two corrugated protective pieces. Average floor space required, 4′ x 9′. Speed up to 100 per minute.



Envelope Filling Machine

ENVELOPE FILLING MACHINES:

These machines are made to fill plain or glassine paper envelopes with food tablets, dyes in powder form, small cans, pills, candies, powder puffs, gauze bandages, etc.

The operations performed by machines of this type include taking the object to be enveloped from a hopper or conveyor belt, opening, loading and sealing envelope. Ungummed envelopes may be used.

A device for inserting a circular may be added to the machine.

The speed depends on the size and shape of the envelope and the article being enveloped.

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Whether your packaging proposition requires labeling, wrapping, sealing or other adhesive operations we have the experience and the facilities for supplying the *right* glue to suit each specific need. *Reliability* and *Uniformity* have always distinguished ARABOL products.

We have perfected a special adhesive for every make of machine on the market which applies glue or paste in the process of packaging. Most of these adhesives have been developed in co-operation with the machine manufacturers and are recommended by them for producing best results with their equipment.

Each year we receive thousands of inquiries about glues, gums and pastes for packaging requirements. These inquiries come to us from practically every trade and every field of industry, and they cover a great variety of adhesive operations. We give careful study to each inquiry, and in most cases we can recommend an adhesive that will do exactly the work required. We are often asked to suggest a cheaper glue to take the place of a more expensive product.

All users of adhesives are invited to avail themselves of this service, without obligation. Whether adhesive requirements are simple or complicated we will be glad to offer suggestions based upon our adhesive experience of almost 50 years.

XUM

ARENCO MACHINE COMPANY, INC.

25 WEST 43rd STREET, NEW YORK, N. Y.

Designers and Manufacturers of Tobacco Packing, Stamping and Labeling Machines

PRODUCTS:

Cigarette and Tobacco Packing Machines and Labeling and Banding Machines.

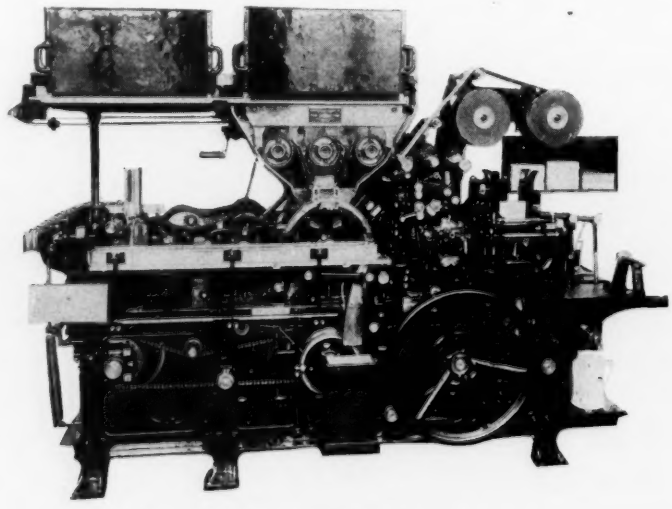
PACKING MACHINES:

There are 4 models of the Arenco Cigarette Packing Machine type E as illustrated below. Each is used to pack up to 10 round cigarettes in one row packages, up to 20 round cigarettes in two row packages or up to 25 round cigarettes in three row packages. Model EA is for packages with single paper wrapper. Model EB is for packages with single cardboard wrapper, usually of the envelope type. Model EC is for packages with outside paper wrapper and inside wrapper of paper lined foil or glassine. This model is in general use in the United States and Canada. Model ED is for packages with outside cardboard wrapper, usually envelope type and inside wrapper of paper lined foil or glassine. Each can turn out 3800 to 4500 packages an hour, requiring one operator. A 1 horsepower motor is supplied with each packer. The machine is 6′ 4″ high, 8′ 8″ long and 4′ 2″ wide. Its net weight is 5400 pounds. The revenue stamps are put on the packages by a labeling and banding machine working synchronously with the packer. These machines are described below.

LABELING AND BANDING MACHINES:

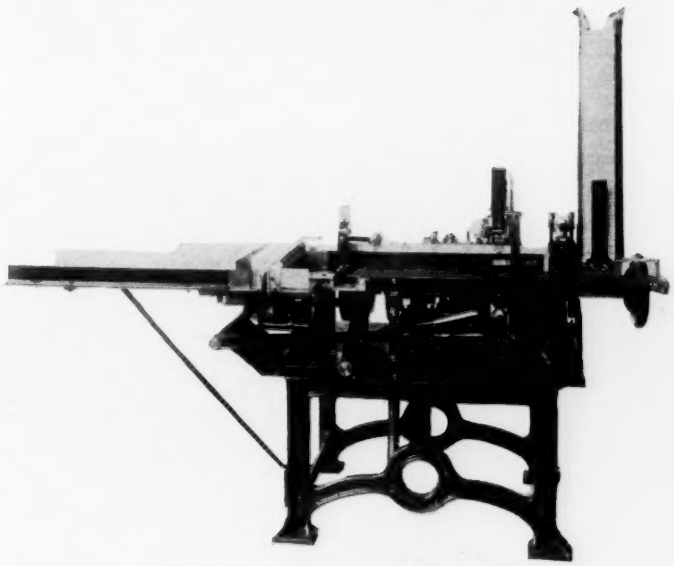
For affixing seals or revenue stamps to various types of packages containing tobacco, cigars, cigarettes, playing cards, matches, etc., the Arenco TAF machines have been specially designed. There are four such models, each being made to facilitate the discharge of the packages according to the wrapping or cartoning methods employed. Model TAFBA discharges the packages standing on end in a single row, laterally to the machine. This machine is 5′ long and 2′ wide. Model TAFCE discharges the boxes standing lengthwise in rows of any desired number, *e.g.*, 5, 6, 10 or 12. This model, which is 4½′ long and 4½′ wide, contains a box ranging device which is at right angles to the machine. Model TAFDI is similar to Model TAFCE, except that it has a belt conveyor, this being placed between the machine and the box ranging device. In this way, when seals are shaped so that they are placed around the box or on the flat side, a longer drying time is permitted, thus enabling the inspector to check up before they are turned edgewise into the receiving tray. This machine is 7½′ long and 4½′ wide. The last of these models, TAFFO, which is illustrated on the next page, has the box ranging device on the table laterally to the machine. For thin packages which carry the stamps on the narrow side, this machine is ideal. From 10 to 25 or more boxes can be placed in each row. This machine is 6′ 4″ long and 2′ 4″ wide.

Each of these machines can handle from 4000 to 6000 packages an hour, with only one girl in attendance. These machines can generally be arranged to handle various sizes of packages, and if necessary can be



The Arenco Cigarette Packing Machine, type E

ARENCO MACHINE COMPANY, INC.



The Arenco Labeling and Banding Machine, Taffo type B

adjusted for special sizes. Ungummed and unperforated sealing stamps or bands are used most successfully in these machines. While the standard machines work with cut seals that are stacked flat in the magazine, special arrangements can be made whereby the seals can be cut from sheets, or even taken from a bobbin punched with registering holes. It is possible to feed the boxes and the seals without stopping the machine, thus permitting continuous operation. As will be seen from the illustration, the boxes are placed in a funnel-shaped magazine. From here, one by one, they are taken out by a plunger. A similar arrangement is used in feeding the seals. The lowest one is taken by air suction and delivered to the tongs. This drags the stamper band over the rotating pasting roller. All the receiving trays are usually made detachable so as to allow the simple replacement of filled trays. Either a belt or direct geared motor drive can be used on any of these machines. The motor used is of the ¼ horsepower type. The pulley is 10″ long and 2″ wide. The net weight of each of the machines is 700 pounds, while they are each 5½′ high.

The Arenco Duplex Stamping Machine type TAV is really two TAF machines synchronously operated. Originally designed for the American Tobacco Company, Inc., for the application of both standard revenue stamps and small oblong seals on the Melachrino boxes, it lends itself, though, excellently for similar work. It is adjustable for different size boxes and stamps or bands. The seals can be placed in any position, the discharge being arranged to suit. This machine can produce 4,000 to 6,000 boxes an hour with a single girl in attendance. A direct geared 2/5 horsepower motor or a belt drive can be used. The pulley is 14″ long and 2¼″ wide. The machine is 5′ 9″ long, 2½′ wide and 5½′ high. Its net weight is 1,100 pounds.

For pasting bands or labels on round cigarette, cigar, tobacco or similar type boxes, the type KOC Banding and Labeling Machine has been designed. The band can be arranged to cover two, three or all four sides of the packages to suit. The packages are fed into an upright funnel, while the bands are stacked flat in the magazine. Packages up to 5½″ long and 3½″ wide, labels 9″ long and 5″ wide, and sealing or revenue bands 14″ long can be handled by this machine. From 2000 to 3500 boxes an hour can be turned out with a single girl in attendance. A ½ horsepower motor is used. The pulley is of the same length and width as used on the TAV machine. The machine is 5′ long, 3′ 8″ wide, and 5′ 2″ high, with a net weight of 1500 pounds.

XUM

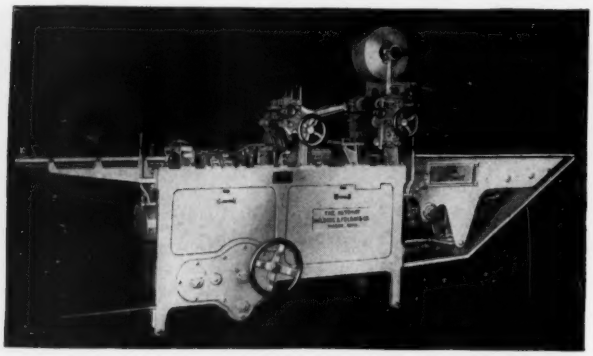
THE AUTOMAT MOLDING & FOLDING CO.

16-18-20 Broadway Toledo, Ohio

AUTOMAT
PRINTING WRAPPING & CARTONING EQUIPMENT

PRODUCTS

Wrapping and Cartoning Machines, Wrapping Machines, Tub Cutters, Cutting and Printing Machines and Conveyors.

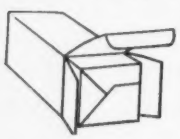


GENERAL INFORMATION ON WRAPPING AND CARTONING EQUIPMENT

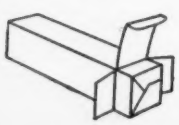
The principal advantages of Automat equipment are: reduced payroll, increased production, and saving in floor space. An outstanding feature of the Automat is the displacement of doubtful human hands with clean, sterile metal fingers, which makes it possible to wrap and carton butter without being touched with hands. The operation of Automat equipment does not require skilled help. Three operators will easily replace fifteen people using the hand wrap method. Standard cartons may be used, and printed parchment in rolls to fit the Automat is easily obtained. It folds a wrap which practically seals the print, and encloses butter in neat, square cut cartons without buckled ends.

Automat equipment is absolutely sanitary. All metal used in the Automat is of a special alloy to withstand the reaction of acid, salt water and constant washing and scalding.

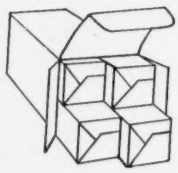
TYPES OF AUTOMATS



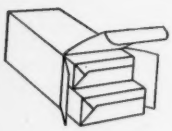
Type A. Wraps and cartons pound solids. Size of print 2½"x2½"x4¾". Capacity 4,800 pounds an hour. Speed 80 pounds a minute. Occupies floor space 2 feet 3 inches by 11 feet 6 inches.



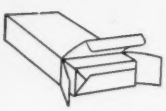
Type C. Wraps and cartons quarter pound prints. Size of print 1¼"x1¼"x4¾". Capacity 1,500 pounds an hour. Speed 100 quarters, or 25 pounds, a minute. Occupies floor space 2 feet 3 inches by 10 feet 6 inches.



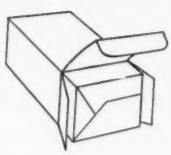
Type F. Wraps individual quarters in parchment and assembles four quarters in a pound carton. Size of print 1¼"x1¼"x4¾". Capacity 1,500 pounds an hour. Speed 100 quarters, or 25 pounds, a minute. Occupies floor space 2 feet 3 inches by 12 feet.



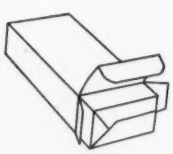
Type H. Wraps halves in parchment and assembles two halves in one pound cartons. Size of print 1¼"x2½"x4¾". Capacity 2,400 pounds an hour. Speed 80 prints, or 40 pounds, a minute. Occupies floor space of 2 feet 3 inches by 12 feet.



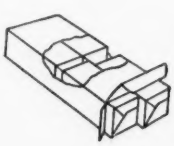
Type K. Wraps and cartons half pound prints. Size of print 1¼"x2½"x4¾". Capacity 2,400 pounds an hour. Speed 80 halves, or 40 pounds, a minute. Occupies floor space of 2 feet 3 inches by 11 feet 6 inches.



Type P. A. Wraps and cartons pound solids in a Pennsylvania style carton. Size of print 2⅛"x2⅞"x4⅞". Capacity 4,800 pounds an hour. Speed 80 pounds a minute. Occupies a floor space of 2 feet 2 inches by 11 feet 6 inches.

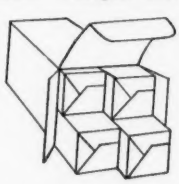


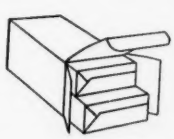
Type W. A. Wraps and cartons pound solids in a Western style carton. Size of print 1½"x3"x6½". Capacity 4,800 pounds an hour. Speed 80 pounds a minute. Occupies a floor space of 2 feet 3 inches by 11 feet 6 inches.



Type W. F. Wraps individual quarters in parchment and assembles four quarters in a Western style pound carton. Size of print 1½"x1½"x3¼". Capacity 100 quarters, or 25 pounds, a minute. Occupies floor space 2 feet 3 inches by 11 feet 6 inches.

Dual Type. This model may be easily adjusted to wrap and carton four quarters or twin halves. Size of prints 1¼"x1¼"x4¾" or 1¼"x2½"x4¾". Capacity 1,500 pounds an hour. Speed 100 quarters, or 25 pounds, a minute, or 50 halves, or 25 pounds, a minute. Occupies floor space of 2 feet 3 inches by 12 feet.



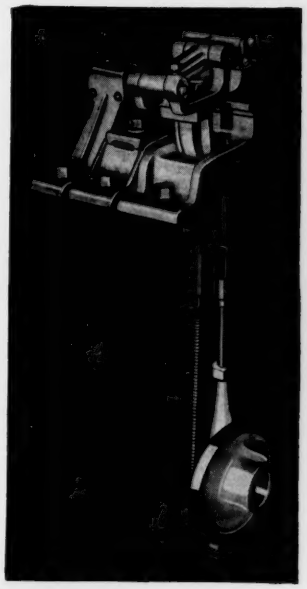


Sketches above show types of work which may be done on the Dual Type Automat by merely making a few easy adjustments.

THE AUTOMAT MOLDING & FOLDING CO.

ATTACHMENTS AUTOMAT

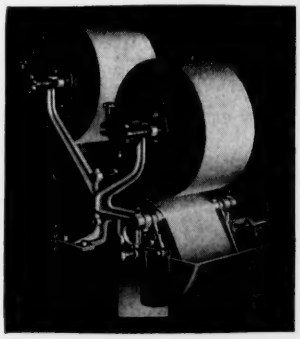
To meet the demands of the trade the following attachments have been designed to fit all models in the Automat line.



DATING DEVICE

The utility of the dating attachment appeals to many dairies, as it offers an automatic means of embossing a date on the flap of the carton as it passes through the machine. This mark on the package serves as an identification of the age of goods if they are returned to the dairy, and has other advantages in keeping shipping records.

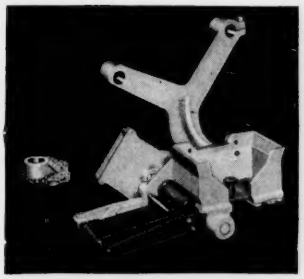
DOUBLE WRAP ATTACHMENT



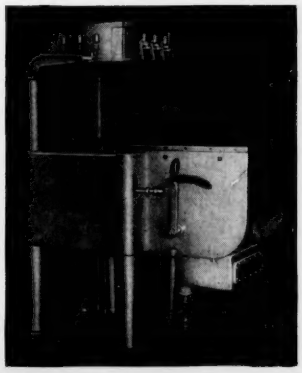
Commercial and scientific practice has demonstrated that butter may be kept in better condition over a longer period of time when the double, or wet wrap, is used. This wrap consists of a parchment wrap passed through a brine or other solution, with a waxed wrapper on the outside. The benefits of the double wrap are three-fold, namely, retention of flavor; better keeping quality; less loss in weight.

SLIP FEEDING

Many desire to enclose advertising slips, coupons, etc., with the prints they wrap. A slip feeding attachment has been designed to meet this demand and it may be used in connection with any type of Automat.



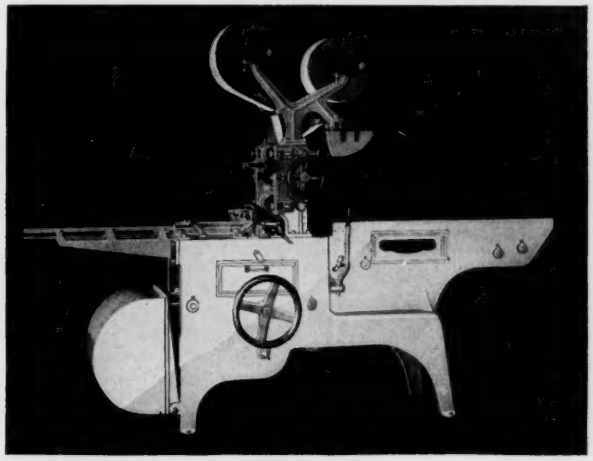
AUTOMAT HYDRAULIC PRE-CUTTER



Designed to cut tub butter of low temperature and is hydraulic in operation.

When the butter has been cut into slabs it is automatically dumped in the hopper of the print making machine.

The Pre-Cutter is powered with a waterproof one horse-power motor. It is easily cleaned and the metal is impervious to moisture and the action of salt water.

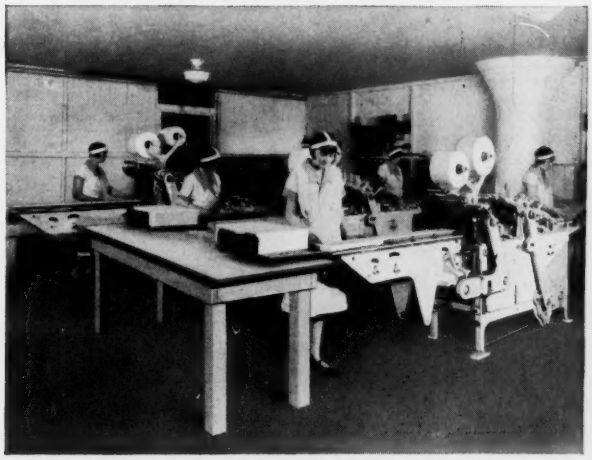


AUTOMAT WRAPPER

The Automat Parchment Wrapper has been designed and built in response to a persistent demand from the trade for a wrapper without the cartoning unit.

This wrapper may be equipped to use either the single or double wrap, and may be furnished to wrap pound solids only, or an adjustable model that will wrap quarter pounds or half pounds. The wrapper is powered with a waterproof one-half horse-power motor.

TYPICAL AUTOMAT INSTALLATION



The above photo shows a typical Automat installation.

Our Engineers are always available in designing efficient ways of handling prints between print cutters and Automat equipment by the use of turn tables and other efficient methods. Several plants using the turn table method feed more than one Automat with a single cutting machine.

AUTOMAT SERVICE

The lack of service never need stand between a dairy and the installation of Automat equipment. Machines of the finest quality and efficiency are our first consideration, and next comes service of the highest type to keep these machines in constant operation.

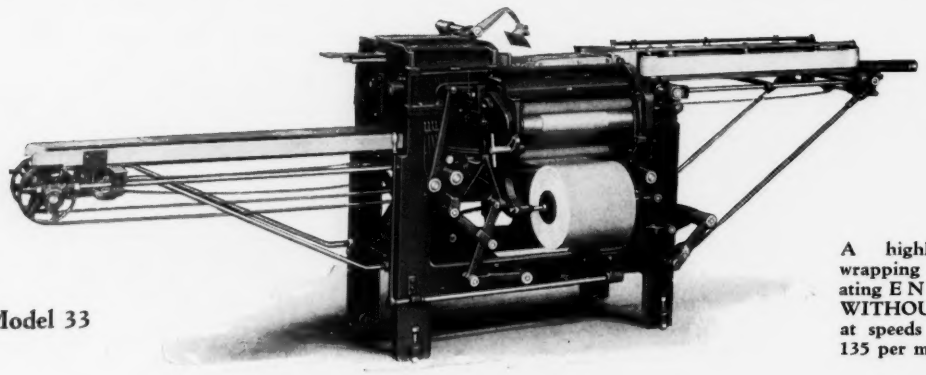
There is hardly a dairy in the United States that is not within twelve hours' ride of an Automat service man.

BATTLE CREEK WRAPPING MACHINE COMPANY

12th Street

BATTLE CREEK, MICHIGAN

ONE MACHINE—TO DO THE WORK OF MANY



Model 33

A highly efficient wrapping unit—operating ENTIRELY WITHOUT CAMS at speeds from 60 to 135 per minute.

A group of related package sizes handled in combination on one machine has heretofore represented a situation not practical or easily handled in daily practice. Much depended on the human element, and if an operator were not thoroughly familiar with all the changes necessary to alter a machine from one package size to another, the machine could not wrap efficiently.

Convertibility on the Model 33 has been developed on a new principle. Instead of changing the location of parts, folders, etc., from one package to another, the entire equipment is removed from the machine and in its place is positioned additional equipment built for the next size to be wrapped. There is no fitting or adjusting to be done. The equipment is factory-built for the package to be wrapped and will always wrap that size package when placed on the machine and locked.

The advantage of convertibility can be seen and used whenever individual package sizes are not produced in sufficient volume to warrant automatic machine wrapping, but which combined with the volume of other related sizes, make such an investment well worth while.

In many factories the daily total of packages hand wrapped warrants the installation of an automatic machine, but this total may be the combination of 2 or 3, sometimes more sizes. Separately they do not warrant individual wrapping machines for each size, but in combination a large saving in hand wrapping may be made with a convertible machine capable of handling several sizes.

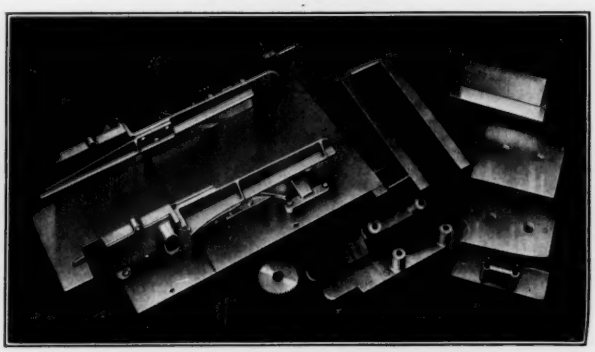
Model 33 is equally as well adapted to the handling of individual size packages, in which case the features of convertibility are not built into and incorporated in the machine.

A large package wrapping machine, Model 35, is also built for handling cartons, caddies, etc., in combination,—where dimensions are greater than the capacity of Model 33, described here. Detailed information will be furnished upon request.

PACKAGE COMBINATIONS

View of package combination now being handled on one machine.

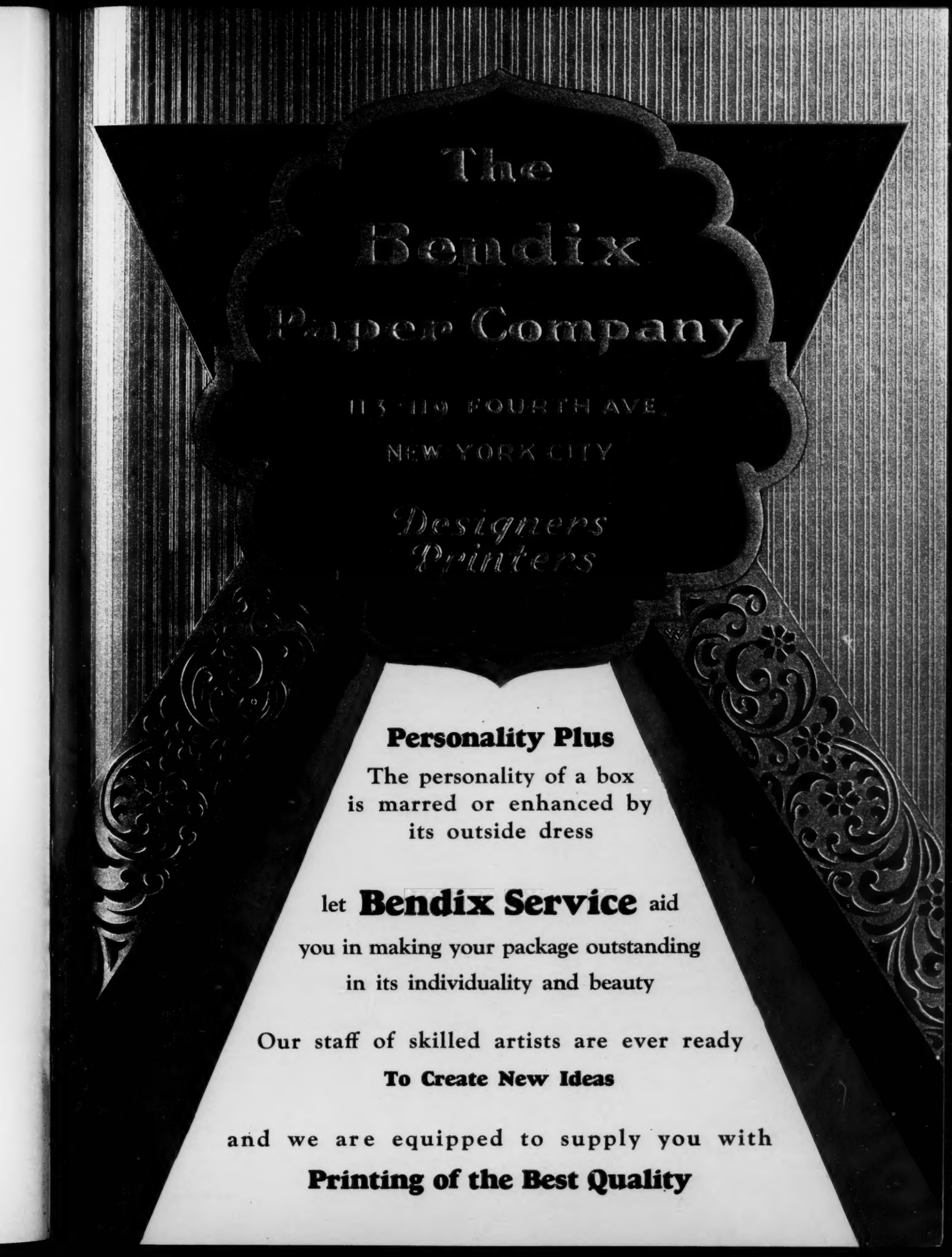
CONVERTIBILITY



View of complete equipment change needed to convert machine from one package size to another.

Change in equipment from one size to another can accurately be made in 5 to 10 minutes time.

Automatic machinery also manufactured for the wrapping of—butter, (¼—½—1 pound prints in combination), yeast, scrap tobacco, chewing gum, biscuit cartons, caddies, (in kraft paper), confectionery packages, etc. Hand operated machinery for odd sizes, small production work, etc.


The
Bendix
Paper Company
113-119 FOURTH AVE.
NEW YORK CITY
Designers
Printers
Personality Plus
The personality of a box
is marred or enhanced by
its outside dress
let Bendix Service aid
you in making your package outstanding
in its individuality and beauty
Our staff of skilled artists are ever ready
To Create New Ideas
and we are equipped to supply you with
Printing of the Best Quality

H. R. BLISS COMPANY, Inc.

Manufacturers of Adhesive Sealing and Wire Stitching Machinery for Fibre Containers of Every Description

NIAGARA FALLS, N. Y.

50 Church St., NEW YORK — SAN FRANCISCO, CALIF.

Transportation Bldg., CHICAGO

DODSON PRINTERS SUPPLY CO., Atlanta, Ga.

PRODUCTS:

Corner Stay Stitchers; Top and Bottom Sealing Stitchers for Solid Fibre and Corrugated Shipping Containers; Combination Sealing Stitchers; Box Stitchers and Stitching Equipment for assembling all types of paper boxes; Adhesive Sealing Machines, automatic and semi-automatic; Bliss Fibre Containers.

GENERAL INFORMATION:

Bliss Stitchers are the best and most economical machines on the market for the various purposes for which they are designed. They possess extreme durability even under the severest of service conditions. Their performance is accurate and highly efficient, assuring the user of a uniform product accompanied with minimum wastage at a very low cost of operation. They require a negligible amount of time and attention, reducing maintenance costs to an extremely low figure.

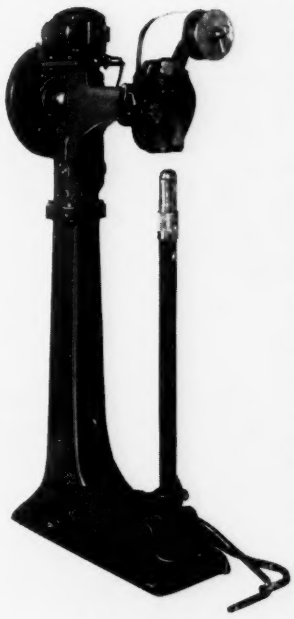
The rugged construction of Bliss Stitchers enables them to withstand heavy duty work on practically all grades of material. They offer the users a complete and rapid system of handling paper shipping cases from start to finish throughout the plant. Their adoption insures the most economical and efficient method of assembling and sealing containers of assorted sizes in plants having unusual and varying packing and handling conditions.

One of the outstanding features of Bliss Stitchers is the Bliss *all steel*, high speed, detachable head. It is self-contained and can be quickly removed for servicing by removal of three bolts. While this is being done another head can be quickly put in place. Bliss equipment is never idle.

Our experienced package engineers will gladly assist you in the designing of the proper type of stitching equipment to suit your particular problem. A consultation between your and our engineers may result in a substantial reduction in your packaging and handling costs.

THE NEW BLISS "SEALING STITCHER":

Bliss "Sealing Stitchers" are made in Top, Bottom and Combination types. The Bottom Sealer shown above has the Bliss *all steel*, high speed, detachable head. The multiple disc clutch method of driving (as used in the automobile industry), permits of high speed with silent operation. Does not jar the machine in stopping and starting, as do other types. Prevents the breaking of parts in case of jamming of wire or overload. Extra big clearance between anvil and head of machine permits of insertion of cases without tilting post, a feature which saves much time. Anvil on post can be raised or lowered quickly with a few twists of the wrist. No wrench required. Anvil post readily adjustable sideways, forward and backwards, thus permitting the centering of post without moving the head.



Bliss Bottom Sealer

Bliss Bottom Sealers are made in 15″ and 25″ sizes. Will handle all lengths and widths of cases and depths up to 30″; machines furnished for greater depths if desired. No change whatsoever required for different sizes of cases. Operating speeds, 300 per minute. One operator required. Weight, 560 pounds. Floor space occupied, 15″ x 2½′. ¼ H.P. motor to drive. Machine can be made portable if required.

THE NEW BLISS CORNER STAY STITCHER:

This machine has been specially designed to stitch together the corners of covers used on Cracker Caddies. It will positively draw together tightly the spread that often occurs between the flanges of the cover when the corner is formed. The Bliss Corner Stay Machine is the only machine that actually clinches the staple into the board, thus insuring a tight and strong corner.

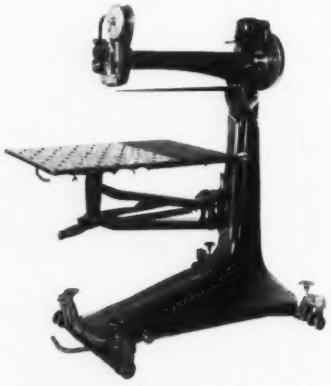
Operating speed: 20 to 25 covers per minute. One operator required. Weight, 550 pounds. Floor space requirements, 24″ x 12″; ¼ H.P. to drive.

Bliss Corner Stay Stitcher

H. R. BLISS COMPANY, Inc.

BLISS TOP SEALERS:

Bliss Top Sealers resemble the Bliss Bottom Sealer closely. The accompanying illustration shows the machine with all metal table equipped with new frictionless ball-bearing and roller contact with the box. This permits of easy manipulation of container in any direction.

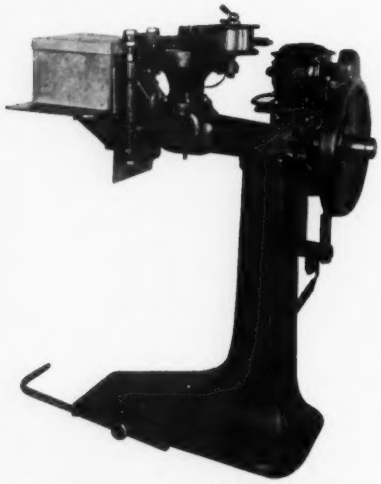


Bliss Top Sealer, mounted on casters

Table equipped with improved tilting device. Has free movement forward and backward and can be swivelled in any direction. Blade anvil made of specially forged steel, heated, treated and tested to withstand several hundred pounds load. Blade anvil adjustable to any height by adjusting screw. Table design of counter balance spring type, requiring very little effort on part of operator to change position.

Made with 15″, 25″ and 33″ blade anvils. Will seal cases up to 33″ in length. Depths up to 30″, with extra adjustment for cases up to 34″ when desired.

THE NEW BLISS CADDY COVER "SEALING STITCHER":



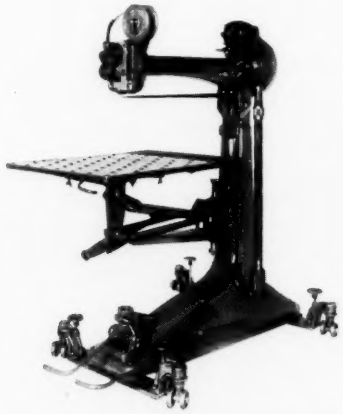
Bliss Caddy Cover Sealing Stitcher

The New Bliss Caddy Cover "Sealing Stitcher" will stitch on flanged covers while same are in an upright position, adjustments quickly made to any size or depth. Cost for wire (20 x 25) is less than ten cents per thousand caddies.

Operating speed, 20 to 25 per minute. One operator required. Floor space requirements, 1½′ x 2½′. Weight, 575 pounds. ¼ H.P. required to drive.

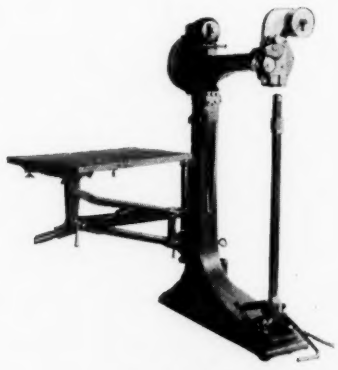
THE NEW BLISS COMBINATION MACHINE:

This machine is the only one of its type that has quick adjustments for sealing both the bottoms and tops of paper shipping cases. Represents great economy where daily production permits of the double use of the ma-



In position for top sealing

chine, thus saving the purchase of two separate units. The accompanying illustrations show the Combination Sealer in position ready for top and bottom sealing. Table and blade anvil are swung out of the way without need of tools. A patented feature of specially designed blade permits its lying flat against back of post. Steel



In position for bottom sealing

bolt locks blade anvil in position instantly. Small hand lock screw permits of removal of post quickly to put machine in position for top sealing. In top sealing post is out of way, yet ready for instant use.

H. R. BLISS COMPANY, Inc.

BOX STITCHERS:

Bliss Box Stitching Machines are made in ten different models for the assembling of all types of cartons, set-up boxes, suit boxes, fancy boxes, etc.; in fact, every place where wire stitching equipment can be used. The machines are built for heavy duty work on all grades of material. Can be equipped to drive flat bookbinders' wire, or all gauges of coppered wire and the new Hy-Bar wire. The machines perform accurately and efficiently, producing from 15 to 25 per cent more work per day than other makes; forms and drives as many as 500 stitches per minute. The Box Stitching Machine

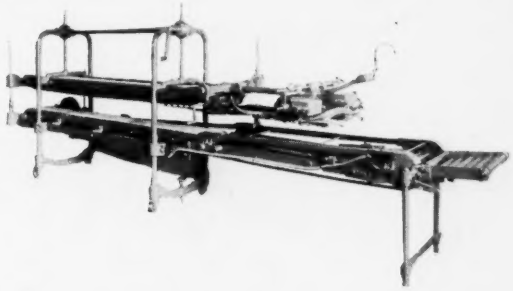
One of ten different models Bliss Box Stitching Equipment

is made with 15″, 25″ and 33″ throats. Standard heights are 40″, 45″, 50″ and 52″. Suitable for all kinds of box work, including telescope shipping cases, suit boxes, display boxes, etc. Machines designed for any special work.

"BLISS" PORTABLE TOP AUTOMATIC GLUER AND SEALER:

The Bliss Top Automatic Gluer and Sealer assures positive sealing and is adjustable for a wide range of box sizes. The special skip gap cam eliminates the changing of cams in adjusting length of gap. Provision is made for the simultaneous and quick adjustment of side pressure guides, the latter being provided with anti-friction rollers. Special safety mechanism throws out clutch, thus stopping machine in case of overload due to irregular case or improper packing. Automatic feeder permits but one box to enter machine at a time. Danger to operator is minimized by the concealment of all moving shafts, yet so arranged as to permit easy accessibility. Starting and stopping lever located convenient to operator, on either side of machine.

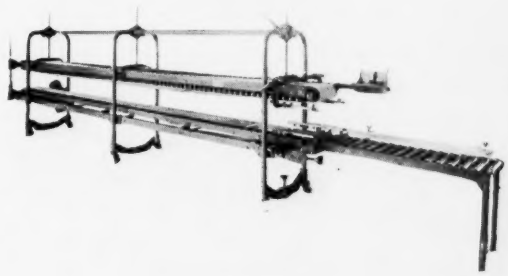
Top and bottom belts on compression unit driven simultaneously, a feature necessary to insure proper seal-



"Bliss" Portable Top Automatic Gluer and Sealer

ing without disturbing the shape of box or the bond of adhesive used, and an exclusive Bliss feature. Belts are quickly tightened without the use of wrenches—also an exclusive Bliss feature. Motor operates continuously—belts starting and stopping automatically. Driving mechanism consists of a self-contained unit, phosphor bronze worm gear, hardened and ground steel worm reduction gear. All gears in housing preventing accumulation of dust and its resulting bad effects. Anti-friction ball-bearings provided at points of greatest wear.

Bliss Sealers will accommodate cases ranging in size from 2″ to 32″ in depth, up to 22″ in width, and any length. Special machines for odd-sized boxes can be furnished on request. Lower compression unit is independently adjustable from 12″ to 25″ from the floor. Furnished with motor direct connected or geared to machine, according to speed desired.



Model A Bliss Sealer

Operating speeds of belts 212′ per minute. Speed may be increased or decreased, depending upon size and contents of box, adhesive used and whether solid or corrugated board box.

XUM

H. R. BLISS COMPANY, Inc.

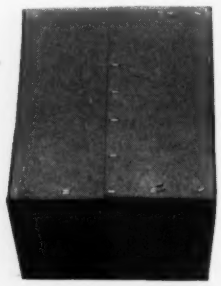
BLISS BOXES:

Fibre Container Boxes, center and side overlap, regular and extended inner flaps.

Bliss Boxes, used by the largest and foremost concerns in the country, give to users of shipping cases a foremost economy consistent with strength and safety. Here are the facts:

(a) Fibre shipping cases are sold by the pound. Reduction in weight, therefore, means reduction in price per container. With equal cubical content, a Bliss Box requires a surface area of fibre board from 8 to 20 per cent less than the old type regular slotted container. In addition, the edge and corner strength of Bliss Boxes have frequently permitted the use of much thinner

Case sealed by wire stitching

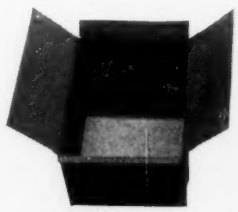


Case sealed by wire stitching

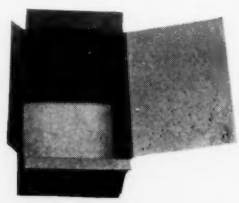
board. In such cases the savings in weight have been from 25 to 40 per cent. Percentage of saving depends upon the type of container used. There is a type of Bliss Box adapted to almost every factory and shipping condition. You won't have to abandon competitive purchasing; for 30 licensed paper mills have been equipped with added machinery which insures equal or less cost of fabrication per container.

(b) Every pound saved in the weight of the container means a saving of money paid to the railroad. Figure what this saving is to you in dollars per year, based upon your freight rates and tonnage and upon even the lowest percentage of weight reduction. It often amounts to from ¼ cent to ½ cent per case.

A Bliss Box is constructed like a trunk. Its strength is concentrated at the edges and corners, at which vital points resistance to the blows and shocks of rough handling in transit are most needed. Bliss Boxes have double reinforcement at edges and corners, firmly welded together with steel wire stitching. Bliss Boxes, unlike any other box, are so constructed that on the sides of the box the fibre or grain of the board runs vertically, and on the ends in the direction giving maximum strength for the particular type of contents. In order to fail along what is usually the line of weakness, the board



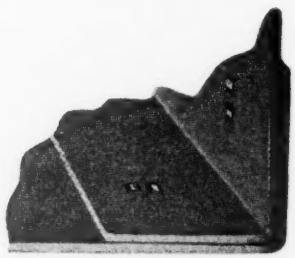
Case open ready for packing, with overlap in center



Case open ready for packing, with overlap at side

has to split or tear across the grain. This adds a large factor of strength. These are the reasons why Bliss Boxes have met every known crushing and shock test.

The use of machines especially constructed for assembling and sealing Bliss Boxes effects a great saving in labor as compared with hand methods for assembling and sealing fibre containers. The speed with which Bliss Boxes can be assembled and sealed is at least equal to the speed with which regular slotted containers can



Section showing corners and ends

be assembled and sealed by wire stitching methods. As between Bliss Boxes and wooden shipping cases there is really no comparison. The labor saving is enormous. Some of the machines used are pictured elsewhere in this catalog. Bliss Boxes are manufactured under license by leading box manufacturers everywhere. If your local mill is not licensed, have them write us for license arrangements.

XUM

BRUNO MANUFACTURING COMPANY

Factory: 59 TERRACE, BUFFALO, NEW YORK

N. Y. Office: 480 LEXINGTON AVENUE, NEW YORK CITY

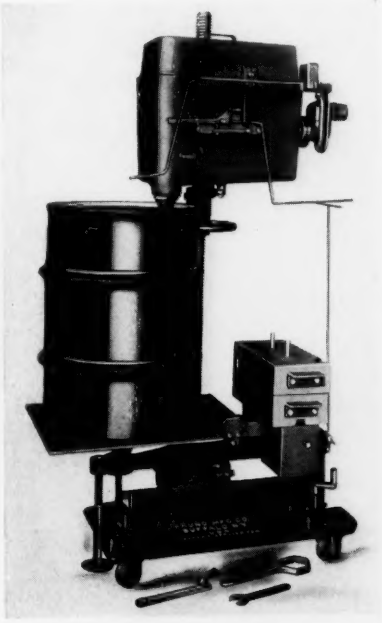
Manufacturers and Designers of Can Filling Machinery

PRODUCT:

Improved universal E-Z Kleen Can Filling Machine.

CAN FILLING MACHINE:

There are three models made, Nos. 14, 15 and 16. No. 14 is for one-quarter pint to one gallon containers while No. 15 is for one-half pint to five gallon containers. No. 16 is for one-half gallon to 15 gallon containers. They are especially designed for filling any size or style of container with syrup, olive oil, lubricating oils, varnishes, paints, shellac, disinfectants, liquid soap, medicines, polish, etc. The combined pressure control reservoir and filling head principle is employed. This insures absolute accuracy in filling, regardless of the height of the supply tanks or amount of liquid in the supply tanks while filling. It is portable and can be easily attached to any tank or feed line. After-flow spatter or drip is eliminated by a combination outlet valve and filling valve which stops the flow of liquids at its extreme end. An automatic shut-off device permits only the correct amount of liquid to enter the container.

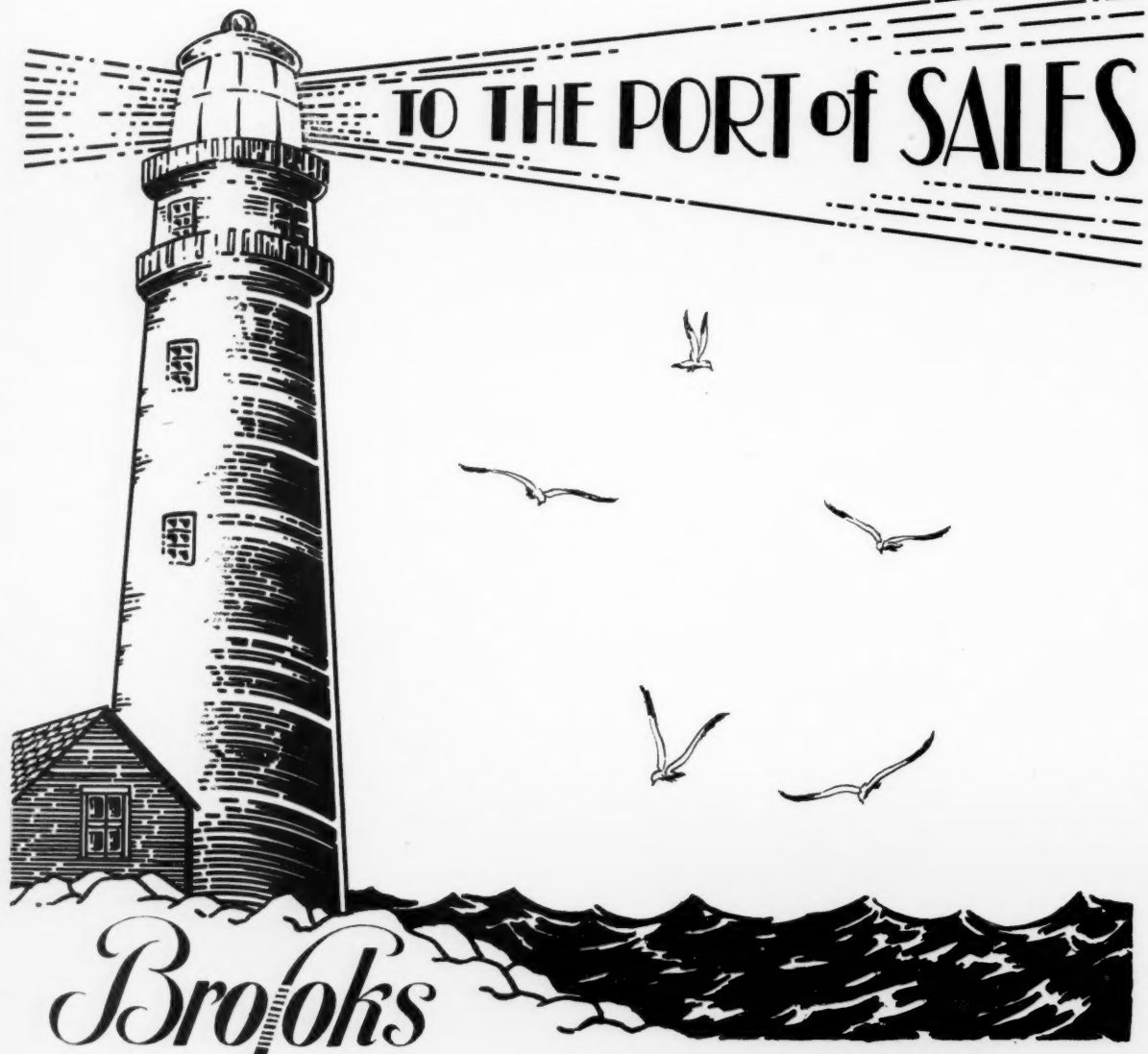


At left is the model No. 14 and at right is the model No. 16 Bruno Improved Universal E-Z Kleen Can Filling Machine.

Only one adjustment is necessary to vary the degree of sensitiveness of shut-off mechanism and that is controlled by the downward movement of the can platform. A balance is provided with graduated beam and sliding poise. This gives a fine degree of accuracy without the use of small weights. The screw column is 55 inches and is threaded in its entire length, permitting the raising or lowering of the combination pressure control reservoir and filling head and also the balance to any height of the feed line or tank outlet. A universal intake joint permits short connections to the feed lines or tank outlets at any angle. A screw clamp holds the joints together. There are no bolts or studs to hinder the flow of liquid, thus permitting rapid disconnection and easy cleaning. The machine can be adjusted to fill any size or style of container in 5 minutes. By lifting off cover of combination pressure control reservoir and filling head all the inside parts are thus exposed, leaving the smooth inside surface of the reservoir as easy to clean as a wash bowl. The machine accurately fills by weight and does not vary as the contents in the feeder storage tanks are lowered or the pressure in these tanks is reduced. Attention is especially called to Model 16 which is a new addition to the line. It has been designed to meet the increasing demand from firms filling drums of 15 gallons capacity or less. It is scientifically built on the same principle as the others and users have found it to be equally accurate, rapid and economical.

XUM

TO THE PORT of SALES



Brooks Lithography

THE SEE OF SALES

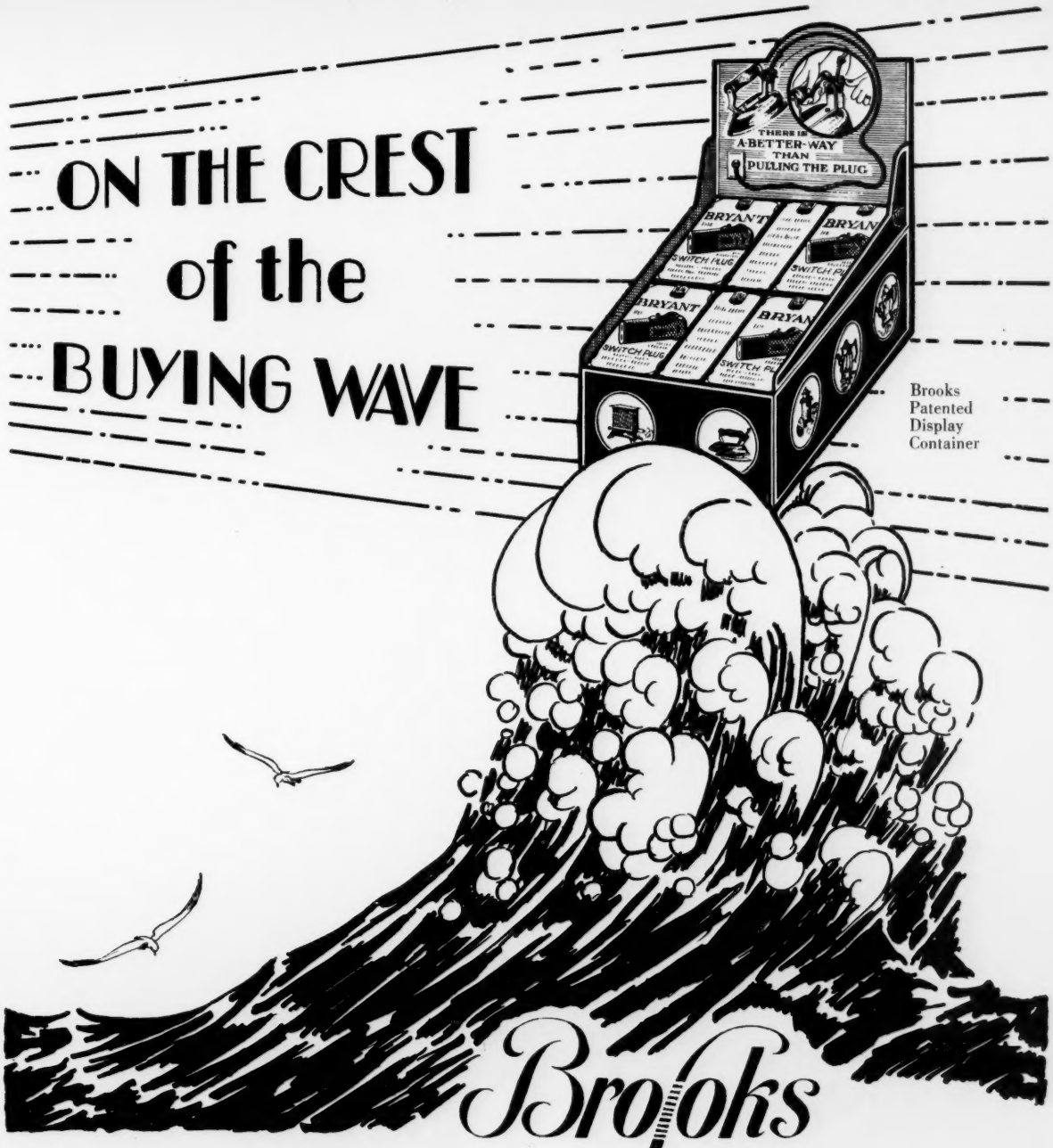
Here's An Important Part of Your Advertising Department!

To make for you a complete system of lithographic sales aids—cartons, displays, folding boxes, paper box wrappers, labels, letterheads—under the supervision of designers, artists, lithographers and advertising experts trained to adapt the high quality of Brooks Lithography to the exacting requirements of your particular business.

Submit your packaging and display problems to our service staff. Would you like to see samples of the sales builders we have created for other nationally advertised products?

BROOKS BANK NOTE COMPANY

ON THE CREST of the BUYING WAVE



Brooks Patented Display Container

Brooks Lithography

Specialists in Lithographed Display Containers

On the Sea of Sales, many and otherwise good products have come to grief through unattractive packaging.

Colorful, modern, display containers, lithographed by Brooks, have increased the sales of many nationally known products. Our experts make a specialty of creating difficult display containers.

Let the Brooks complete lithographic service successfully guide your packages through the channels of distribution—to the Port of Sales. Send your problems to our idea department—no obligation to you.

THE SEE OF SALES

SPRINGFIELD, MASS.

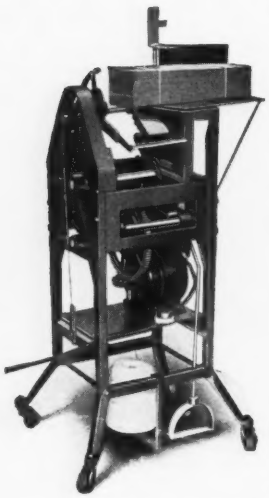
B. H. BUNN COMPANY

Manufacturers of BUNN Package Tying Machines

7329-31 VINCENNES AVENUE, CHICAGO

Improved Method of Packaging

The BUNN Package Tying Machines tie any type of package with cotton twine at the rate of 20 to 30 packages per minute — 10,000 or more per day



WILL TIE:

Parcel Post
Filled Boxes
Biscuit Caddies
Wrapped Packages
Fabrics
Set-up Boxes
Candy Boxes
Paper Bags
Coffee in Bags
Brushes - Mail
Gloves - Hosiery
Underwear
Books - Magazines
Cartons - Labels
Folders - Tickets
Printed Matter

BUNN Tying Machines are now used in over one hundred different industries.

The BUNN Set-up Box Tying Machine (shown below) makes a double wrap of heavy twine on bundles of set-up boxes. It takes but two seconds to make the tie.

The BUNN machines always tie tight with a double wrap of cotton twine and a good, secure knot. Saves time and twine. The cotton twine used is from 4 to 16 ply on the various models.

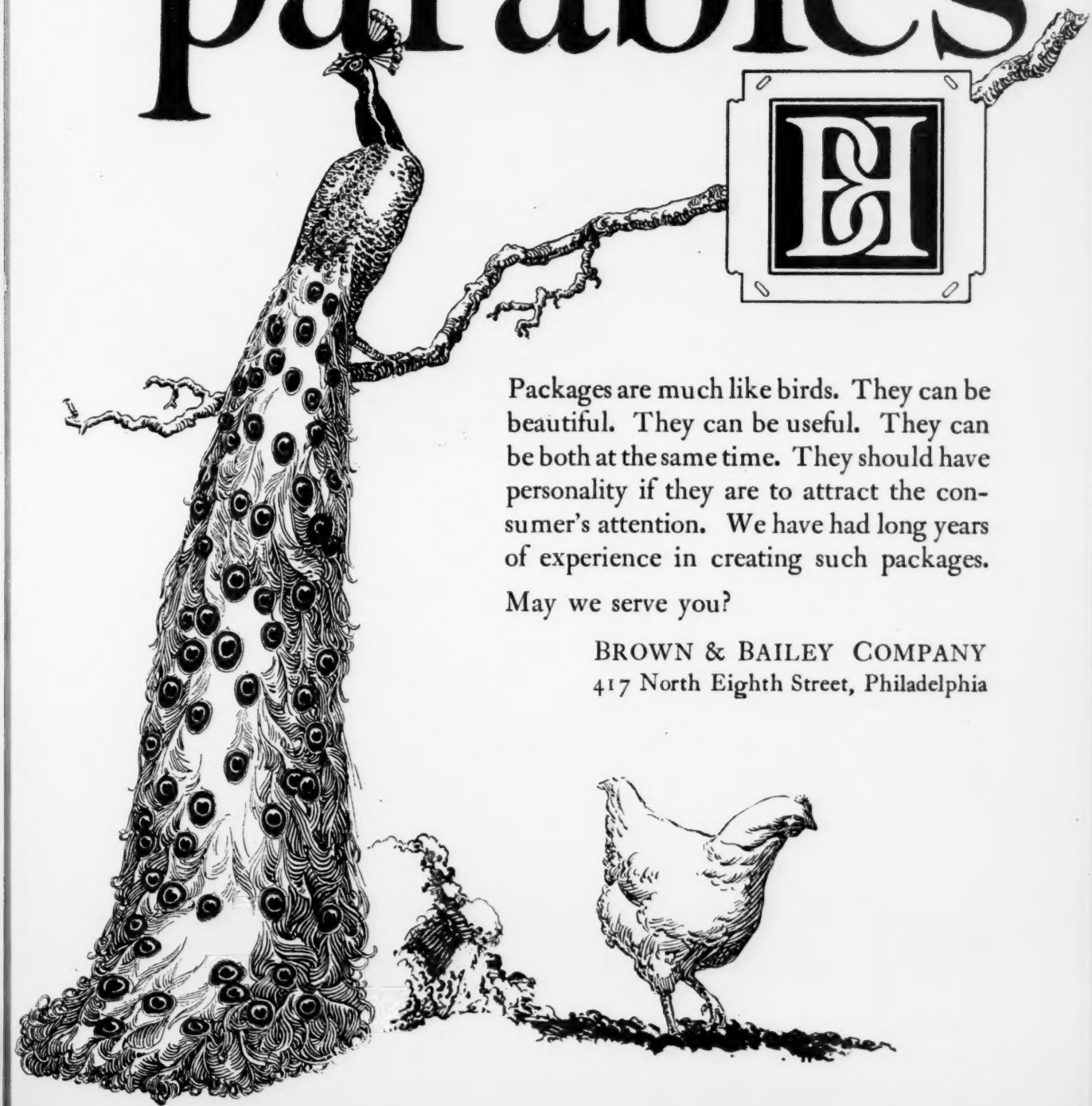
The Turntable machines cross the twine with one wrap each way and one knot. Tie candy and other filled boxes; also many miscellaneous packages.

The BUNN Parcel Post Tying Machine (shown above) will tie all manner of wrapped or unwrapped parcel post packages—without the slightest adjustment, over a wide range of sizes. Makes a double, tight wrap of cotton twine around the package in one and one-half seconds.

Hand tying has been the tag-end of many industries. The BUNN machine has made tying an automatic operation with uniform results. Efficient operation of the machine can be mastered within a few minutes' time. We also handle special tying problems.

The model shown below is tying biscuit and cracker caddies at a great saving over the gum-taping method.

package parables



Packages are much like birds. They can be beautiful. They can be useful. They can be both at the same time. They should have personality if they are to attract the consumer's attention. We have had long years of experience in creating such packages.

May we serve you?

BROWN & BAILEY COMPANY
417 North Eighth Street, Philadelphia

package
~protection
~personality

For work, for play, for beauty, for health, the products you make are best displayed, best protected, best sold *in packages.*

Today, consciously or unconsciously, the buyer gauges the quality and dependability of these products in some measure according to the packages in which they come.

We have been makers of boxes for many years. We study packages not simply from the basis of how best to protect their contents, but also how best to present *them. Many manufacturers have told us we helped them solve this angle of their merchandising problems. Perhaps we can help you.*

BROWN & BAILEY CO.

Makers of high grade folding paper boxes

PHILADELPHIA

Department stores all sell much the same type of articles. But some are so outstanding in the service they render in the quality of their merchandise that their names are known from coast to coast. And such individuality and reputation are very precious assets, jealously guarded.

They wish the impression of this individuality to linger after the purchaser has left their store.

Brown & Bailey have earned a high reputation as makers of boxes for department stores. Among our clients you will find many of those department stores which have earned their reputation for quality by care in handling such details as—packages.

BROWN & BAILEY CO.

Makers of high grade folding paper boxes

PHILADELPHIA

XUM

if~

package
~protection
~personality

a coffee merchant asked us~

"WHAT do you think of my present package?" we would first make sure that it was substantial, that it did its job well in carrying his coffee from his factory through the dealer's store, to the kitchen.

Next we would consider its appearance on the dealer's shelves. Is it striking enough to attract attention? Is it alluring enough to stimulate sales?

And finally we would think of it in the home. With kitchen cabinets, definite kitchen color schemes, the housewife is becoming more exacting than her mother was about the appearance of the things she buys. Students of merchandising have discovered this is true of the things she purchases for the bedroom, the bathroom, and now—for the kitchen.

With these factors in mind we would prepare our recommendation—it might be something new, like the sketch shown above. It might be simply a revision of his old package. It might be a recommendation to adhere exactly to his present package. But it would always be our honest effort to serve him, as we wish to serve you.

ASK US

BROWN & BAILEY CO.

Makers of high grade folding paper boxes

PHILADELPHIA

BURT MACHINE COMPANY

BALTIMORE, MARYLAND

Chicago, Ill. New York City Ogden, Utah Seattle, Wash. San Francisco Hayward Los Angeles

Manufacturers and Designers of Automatic Labeling and Casing Machinery

PRODUCTS:

Automatic Casing, Labeling and Inspecting Machines

CASING MACHINE:

The Burt Electro Caser permits, with a slight touch of the foot on the treadle, a layer of cans to be pushed into a wooden, solid fibre or corrugated case. This machine also spreads the flaps of the cases when the cases are put into position for receiving the cans. It is built on adjustable legs, suitable for a height of from 19 to 30″ at the take-off, the maximum height allowing fibre cases coming off at the proper elevation for entering into automatic sealer. The lifting gate type of separator is used, this being a perfect can separating medium, since it contains no blades, springs or other delicate parts. The entire machine is 6′ 10″ long and 2′ 2″ wide, weighing 550 pounds.

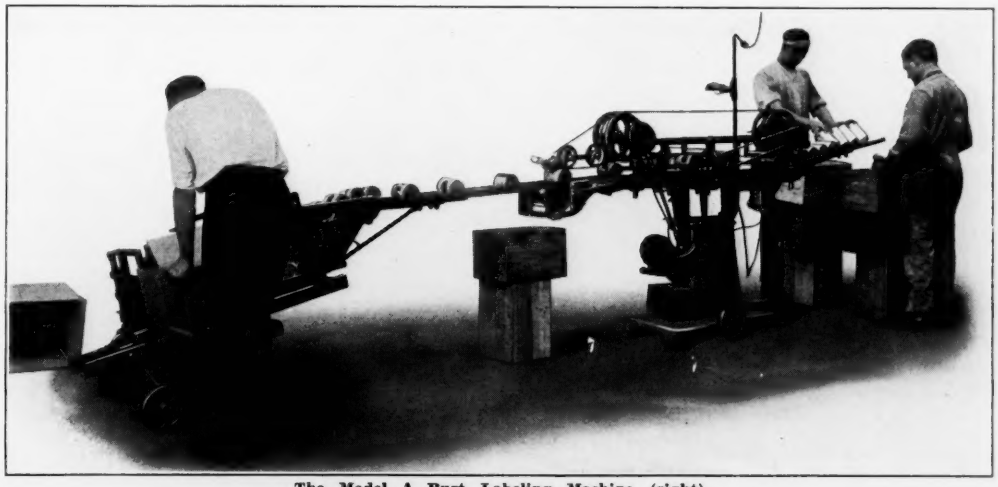
INSPECTOR MACHINE:

This is attached to the discharge end of the labeling machine and automatically throws out any can which has missed a label.

LABELING MACHINES:

There are seven models of the Labeling Machines. There is one for spot labeling No. 10 cans and also applying full-length labels; one for No. 10 cans and full-length labels only; one for cans with ears and full-length labels; one for slip-over cans; one for applying round labels to the ends of cans; a Junior Labeler for small output, and a Labeler known as Model A and adjustable Model A, both for applying labels which overlap to round containers, whether they be of tin, fibre or glass. These A models can turn out 208 cans a minute. Model A is for one size of can, which can also be had for cans with two or more different heights, providing the diameter is the same. The adjustable Model A is an adjustable diameter type (2 or more diameters) with the heights built to order. Both these machines rest solidly when ready for use, but can instantly be made portable by simply raising the base lever, which throws the center wheels in contact with the floor. All adjustments, such as adding glue and paste, regulating paste supply to lap belt, increasing contact of labels with the cans at the pick up, changing positions of the label on the can, may be made while the machine is running. Only for replenishing labels need the machine be stopped. The label feed is positive because the upward travel of the label is automatic, whether there be 100 or 1,000 labels on the table. One knob permits the raising or lowering of this table. The pick-up pot has a reservoir on the outside of the labeler, which facilitates the refilling of glue and also makes the supply visible at all times. A drain cock makes it unnecessary to remove the pot for cleaning. Although these models are equipped for a hot pick-up, arrangements can be made for cold gum. The curling bar has four corners and is reversible. These square corners provide the necessary sharpness which gives the laps of the labels the decided curl. A one-quarter horsepower motor is used, this being connected to the machine via a shaft drive.

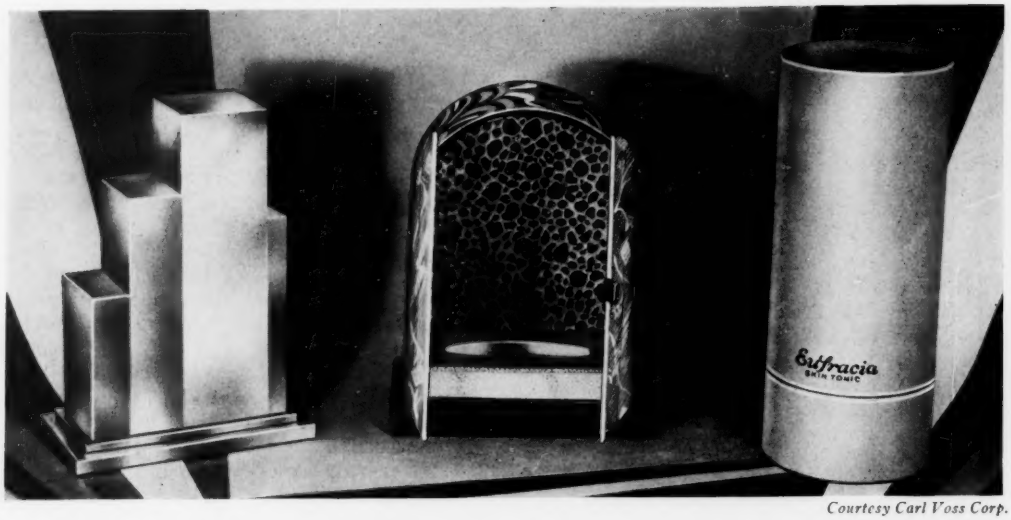
All Burt Machines are entirely constructed of metal. The Model A machines, suitable for 4¼″ diameter cans with run-downs raised, are about 10′ 7″ long, with the standard length front and back run-downs, which are 2′ 8″ each. Machines for smaller diameter cans are from 1′ to 2′ shorter. All standard machines are 1′ 6″ wide and about 4′ 5″ high.



The Model A Burt Labeling Machine (right). The Burt Caser (left).

XUM

ROYAL SATIN



Courtesy Carl Voss Corp.

The Result of Quality Not Quantity Production

ROYAL SATIN is a board which is in a class by itself for the manufacturing of quality boxes wherein high-priced papers and skilled workmanship are used.

ROYAL SATIN is not a four or five finished newsboard made from the general run of stock.

ROYAL SATIN is made to an exact formula under careful supervision assuring you of absolute uniformity.

Proper cleaning, refining, beating, drying and calendering on slow running machinery produces ROYAL SATIN, which is rigid and will not warp—it is the highest finished box board obtainable.

ROYAL SATIN'S additional cost is too small to question — its advantages justify your investigation.

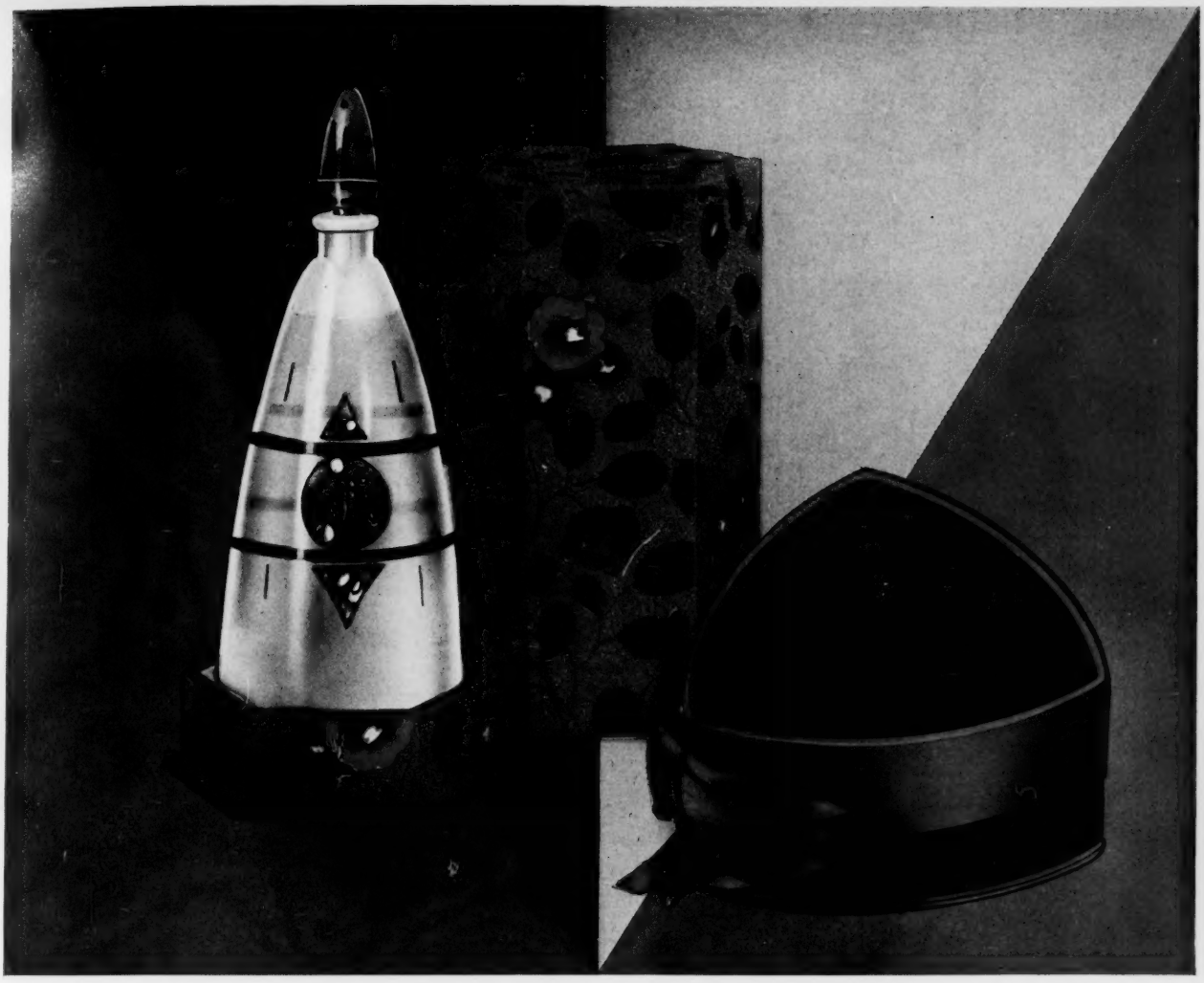
Demand ROYAL SATIN in your boxes for protection.

Consult your boxmaker.

THE BUTTERFIELD-BARRY COMPANY

Sole Distributors

174 Hudson Street **New York**



PRESTIGE

THE prestige that makes BURT CONTAINERS acceptable in the foremost concerns in the country is based solely on the honesty of the product over a period of 35 years.

They know BURT CONTAINERS are delightful in design, flawless in their artistry. They invite companionship; they have that touch of elegance which makes the purchaser feel their intimacy.

If you have a product with beauty as one of its virtues let BURT show you how quality can be enhanced in selling appeal through an appropriate container.

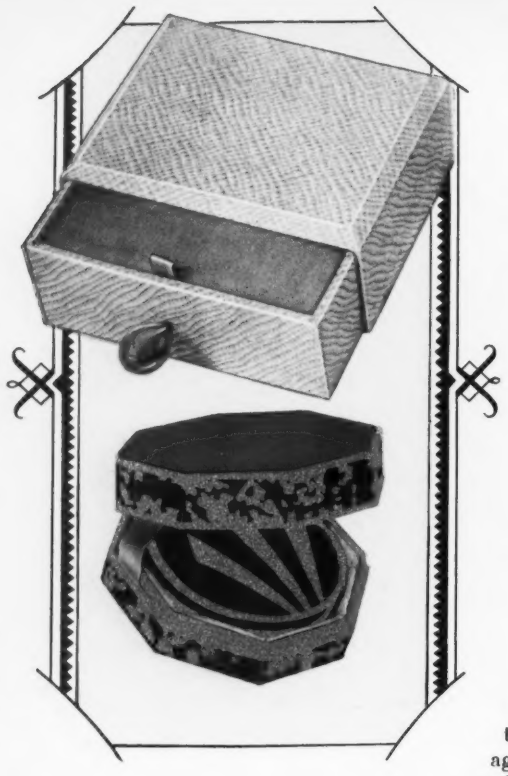
Ask for a BURT expert to confer with you.

F·N·BURT COMPANY·Ltd.

BUFFALO·N·Y·

Manufacturers of Fine Set-Up Paper Boxes

BURT DESIGNS and CREATIONS



ATTRACTIVE PACKAGING
means better Merchandising

The realization that a Quality package is the BIG STEP toward BETTER MERCHANDISING, plus the knowledge of Burt ability to create packages of this type has caused hundreds of manufacturers to come to Burt for cooperation in the solution of their merchandising problems.

Retailers always give preference to merchandise attractively packaged. It is easier to sell and makes a lasting impression on the ultimate consumer. It not only creates the urge to buy but to rebuy, again and again.

The design and creation of sales-compelling packages is a Burt specialty. We maintain a staff of experts who have devoted their lives to quality packaging, both from the practical and merchandising standpoints.

These men will be glad to work with you as to the package that is best suited for your requirements. Their ideas may prove beneficial. Take advantage of this rich experience.

F·N·BURT COMPANY·Ltd.
BUFFALO, N.Y.
Specializing in Fine Set-Up Paper Boxes

Prepared and printed by
Service Department,
"Modern Packaging"

XUM

CONTAINERS TALK

What Does Yours Say About Your Product?

Your container reflects the quality of the merchandise within it. You can't think tomorrow's thoughts in yesterday's setting. Your containers should be modern and up-to-date in every detail.

More and more manufacturers are turning to **BURT** for containers of distinction and charm. For 35 years the **BURT** organization operating the world's largest plant devoted exclusively to fine set-up box manufacture has produced containers that talk—that stand out distinctly in the panorama of packaged merchandise displayed in the average store today. In addition to performing the primary functions of protection, convenience and ability to contain properly the contents, **BURT** containers are so distinguished in design, appearance and make-up as to command attention, register the name of the product in the consumer's mind and appeal to public favor.

Let **BURT** create a Modern Container for your product.

F·N·BURT COMPANY·Ltd.
BUFFALO·N·Y·
Manufacturers of Fine Set-Up Paper Boxes

BURT DESIGNS and CREATIONS

Even more than Appearance

BURT packages are famous for their appearance, their immaculate presentation, their originality, their individuality.

All of these would be impossible but for the fact that for 35 years **BURT** has pioneered; invented and built new machinery, and developed new methods. These outward qualifications are possible because of rigidly enforced standards demanded within the **BURT** organization.

Behind the quiet, masterful grasp of your conditions and problems is the **BURT** organization — always active in devising ways and means to make your sales easier and larger.

F·N·BURT COMPANY·Ltd.
BUFFALO·N·Y·
Manufacturers of Fine Set-Up Paper Boxes

BURT DESIGNS and CREATIONS

Prepared and printed by
Service Department, "Modern Packaging"

Cartoning Machinery Corporation

NEWPORT, RHODE ISLAND

Designers and Manufacturers of Automatic Packaging Machinery

PRODUCTS:

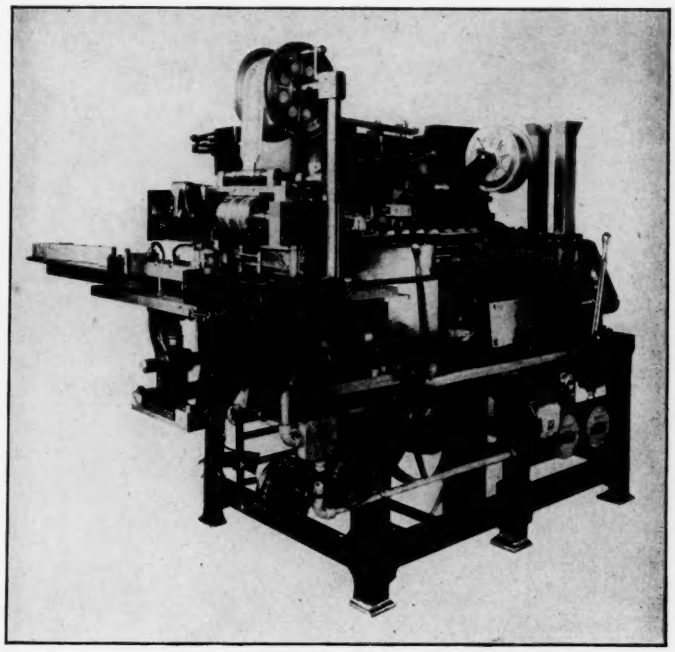
COMBINATION CARTON FILLING AND PACKAGING MACHINERY:

These machines count, weigh, or measure various articles and fill cartons and bags of various types.

CARTON FILLING MACHINES:

Type A-4 is a Combination Counter and Carton Filler for packing medicated or candy tablets, or any other articles in tablet form. It handles small cartons, taking the carton from a collapsed position, opening it, counting and inserting the product, and closing both ends of the carton. Floor space, 3′ x 5′.

Type A-6, a Combination Circular Folder, Counter and Carton Filler, is adapted for medicated tablets and other sundries. It folds a circular, counts the number of pieces to be packed, wraps the folded circular around the articles, inserts them into the carton and closes the carton. Floor space, 3′ x 4′.



Combination Carton Opener, Wax Liner, Counter, and Outside Sealer

Type C-8, a Cigarette Filler, is adapted for filling cartons with cigarette-shaped candies, licorice-cigarettes or other articles in pencil form. By a slight adjustment of the feed hopper, the operator can vary the number of pieces to be inserted into each carton. Floor space, 3′ x 4′.

Type C-10, a Combination Wax Paper Liner and Carton Filler, is specially adapted for candy and medicated tablets, cough drops, etc. It feeds waxed or glassine paper from rolls, lines the carton and fills it with the required amount of articles, by count and closes the carton. Floor space, 4′ x 7′.

Type C-12, a Bar Wrapper and Carton Filler, is adapted for chocolate or candy bars or products in bar form. It wraps the bars in wax or glassine paper or foil, inserts into a carton and closes the carton. Type C-12-85 handles round or wafer shaped articles, wrapping and cartoning same as Type C-12. Type A-3 Cartoner handles chewing gum, Neopolitans, etc., by wrapping and cartoning. Floor space of each, 4′ x 7′.

Type L-86, a Combination Measurer and Carton Filler, handles peanuts, dragees, and various free flowing items by volume feed, readily adjustable. Floor space, 6′ x 4′.

Type G, a Combination Circular Folder and Bottle Cartoner, folds circular and inserts it with a bottle into the carton, and closes the carton. Floor space, 4′ x 7′.

Type D-T, a Combination Circular Folder and Tube Cartoner inserts one or two circulars with a tube of paste or cream into the carton, and closes the carton. Floor space, 4′ x 6′.

Type C-W, a Combination Cartoner and Outside Sealer, wraps the cartons with wax or glassine paper after the cartons have been filled, by count, weight or measure. Floor space, 4′ x 7′.

BAG FILLING MACHINES:

Type B-1, a Bag Filling Machine, that is adapted for measuring and filling plain paper and glassine bags. It takes the bags from their collapsed position, opens them, and then fills them with small candy, salted peanuts, or any articles in bulk, then folds, glues and heat-seals the top. Floor space, 3′ x 4′.

Type C-4, a Pouching Machine, that takes bags or pouches, opens them, inserts bars or chocolate cigars, and closes by folding or gluing. Floor space, 3′ x 4′.

BUNDLING MACHINE:

Type S-81, a Universal Counter and Packer, for counting pencils, making and placing separators between groups of fours or sixes and packing in cardboard sleeves or paper wrappers. Floor space, 3′ x 5′.

CELLOPHANE WRAPPING MACHINES:

Type T, a Combination Label Bander and Cellophane Wrapper, is adapted for banding and gluing bias tape, rick-rack, bindings, etc., after which the packages are wrapped in cellophane and glued. Floor space, 3′ x 5′.

PACKAGE INSERTS

The most *economical* and *effective* medium for

Introducing New Products
Increasing Sales
Insuring Repeat Purchases
Instructing the User
and
Building Good-will

Possibly you are neglecting opportunities for their use or are not using this medium efficiently

We will gladly submit plans without obligation

CLOISTER PRINTING CORPORATION
309 LAFAYETTE STREET
NEW YORK

~

MODERN PACKAGES REQUIRE PACKAGE INSERTS

"Personalize" Your Packages and Sell More of Them

MOST people prefer to have the package they select look different from other packages with similar contents. They desire some unmistakable mark of individuality to distinguish the package.

What is easier than to "personalize" *your* container with Dejonge Fancy Papers. It will focus the attention of the buying public on your package by reason of superior beauty and design.

Fancy papers by Dejonge are available in hundreds of patterns, colors and finishes—varied in design but alike in distinction—one of which is sure to "personalize" your package or container.

Every one of these papers evidences one undisputed Dejonge Quality. To investigate them places you under no obligation—your use of them identifies you with the best fancy papers available—write for samples and prices of Dejonge Fancy and Decorative Papers.

LOUIS DEJONGE & CO.

NEW YORK CHICAGO PHILADELPHIA

XUM

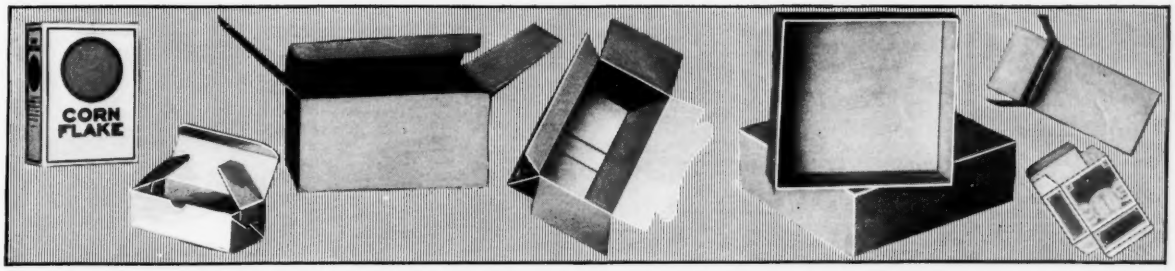
LOUIS DEJONGE & COMPANY
DEJONGE
QVALITY
FOVNDED 1846 NEW YORK

CONSOLIDATED PAPER COMPANY

MONROE, MICHIGAN

700 TONS DAILY PRODUCTION

FOLDING PAPER BOXES PLAIN SHELLS
CORRUGATED AND SOLID FIBRE SHIPPING CASES



Cereal Carton | Cracker Shell | Cracker Caddie | Tobacco Carton | Obaco Box—Stronger, better and costs less than a set-up box | Salt Shell Tuck-end Carton

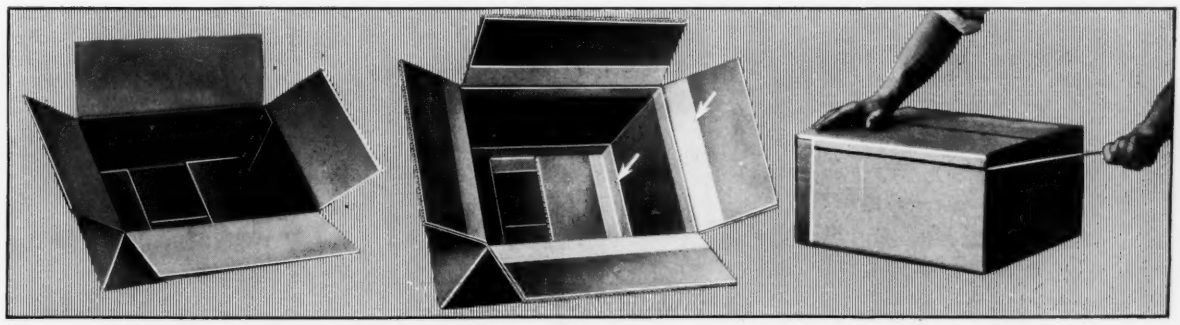
The accompanying illustrations show just a few of the many different kinds of Folding Paper Boxes we manufacture.

700,000,000 Folding Paper Boxes or Cartons are the average yearly production in our Folding Paper Box Factory.

Printed Cartons and Plain Shells for Tea — Coffee — Salt — Soda — Cereals — Soap — Tobacco — Sugar — Beans — Peas — Cookies — Cakes — Pies — Toys — Electrical Goods — Automobile Specialties — Glassware — and many other kinds of merchandise.

Blanks for Carton Forming Machines are also produced here in large quantities.

Our Paper Mills producing 700 tons a day of all Commercial Grades of Paper Board enables us to meet any schedule of shipment and furnish boxes of uniform quality on an order of any size.



Solid Fibre Box | Reinforced Corrugated Box | String Opening Corrugated Box

Fine quality Shipping Cases of Solid Fibre or Corrugated Fibre built to carry your merchandise safely to its destination.

Our Package Designing Department is at your service and will furnish samples of Special Shipping Cases for any packaging job.

The Liner and Straw Board are made in our own Paper Mills and we are able to render exceptionally prompt service on large orders.

CONSOLIDATED PAPER COMPANY

MONROE, MICHIGAN

ECONOMIC MACHINERY COMPANY

Machinery for Labeling Various Styles of Packages

WORCESTER, MASS.

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PRODUCTS:

Machines for Pasting Paper Labels on Bottles, Jars, Tumblers, Cans and Certain Styles of Paper Boxes and Cartons.

RELIABILITY

The company has manufactured labeling machines for over twenty-five years. Its financial resources are ample to insure continuity of operation. It numbers among its satisfied customers Armand & Co., Carpenter Morton Co., John Bene & Son, Reid, Murdoch & Co., Drug, Inc., Eli Lilly & Co., U. S. Industrial Chemical Co., and many others.

DESIGN AND CONSTRUCTION

All of these machines are designed along the simplest lines possible to give satisfactory results. All motions are properly balanced to yield a maximum of efficiency with a minimum of wear. The best material obtainable is used in the construction of these machines. Removable bronze bushings are used in all principal bearings to insure durability. Each machine is thoroughly tested at the factory by labeling with it and using the actual labels and containers which will be used by the customer. A thoroughly up-to-date equipment of jigs is in use in the factory, thus assuring absolute standardization of parts, making perfect duplication possible whenever necessary.

PRICES

The prices of these machines are dependent upon the kind of packages to be labeled and the number of sizes used, as well as upon the type of machine required. Therefore properly labeled packages should accompany each request for quotation to facilitate prompt and complete information being given.

ROTARY WORLD LABELER

Completely Automatic—For bottles such as are used by beverage bottlers, packers of catsup and other food products, for mason jars and tumblers, and various other bottles requiring face labels, this machine qualifies as a satisfactory and reliable high speed apparatus. It places body labels only, or body and neck labels, or body, neck and tinfoil labels.

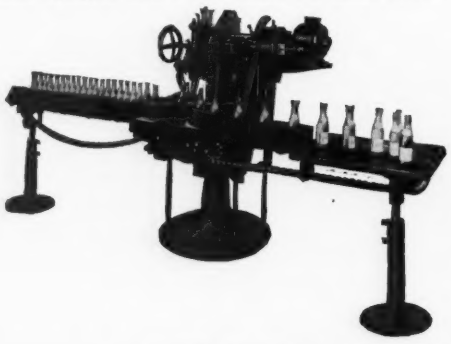
Capacity ranges from 60 to 100 per minute according to the nature of the package.

Floor space machine proper about 4 ft. x 4 ft., conveyor 2 ft. x 12 ft.

Standard conveyor furnished is straightaway and 12 ft. over all, but additional conveyor can be provided to meet any requirement.

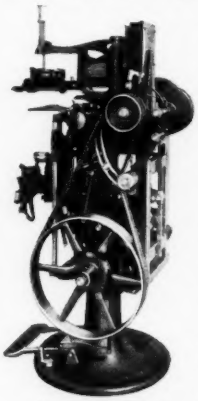
Shipping weight is approximately 2,500 lbs.

Machine equipped with 1 H.P. individual motor drive.



Rotary World Labeler

IMPROVED WORLD LABELER



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Capacity dependent on nature of labeling will range from 20 to 48 packages per minute.

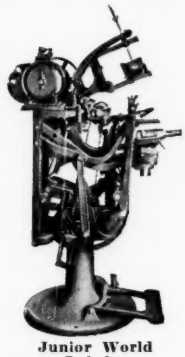
Floor space about 3 ft. x 3 ft.

Shipping weight 900 lbs.

Belt or motor driven. Motor attachment includes individual ½ H.P. motor with reducing gears, belt, idler, and starting box or switch.

Extra large bearing surfaces, large cams and cam rolls, bronze bushings, and perfect distribution of weight assure great durability and freedom from wear.

JUNIOR WORLD LABELER



Junior World Labeler

Semi-Automatic—To meet the demand for a low-priced machine for round bottles only, the Junior World Labeler was designed.

It is limited in range to round packages where the label does not go more than two-thirds around.

Capacity 36 per minute, very satisfactory for limited output.

Equipped with ¼ H.P. motor.

Floor space about 3 ft. x 3 ft. Shipping weight 650 lbs.

STRAIGHTAWAY WORLD LABELER

Completely Automatic—This is a new type of World Labeler designed for applying labels to a wide variety of bottles and packages. It has a greater range of work than the Rotary World Labeler, and it handles flat and oval bottles as well as round bottles.

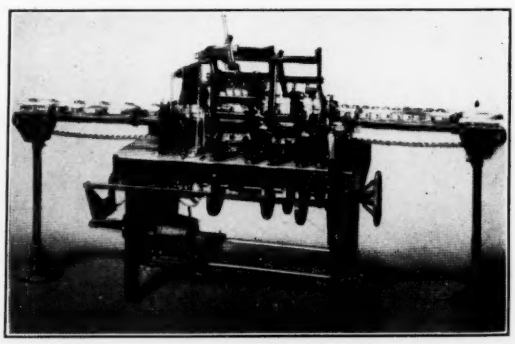
It gums the entire surface of the label.

The speed of the machine is 75 bottles per minute or less.

Floor space occupied by machine proper is 3 ft. x 4 ft. Conveyor length overall is 10 ft. but additional conveyor can be supplied where required.

Shipping weight is about 1,500 lbs.

Standard equipment includes a ½ H.P. motor.



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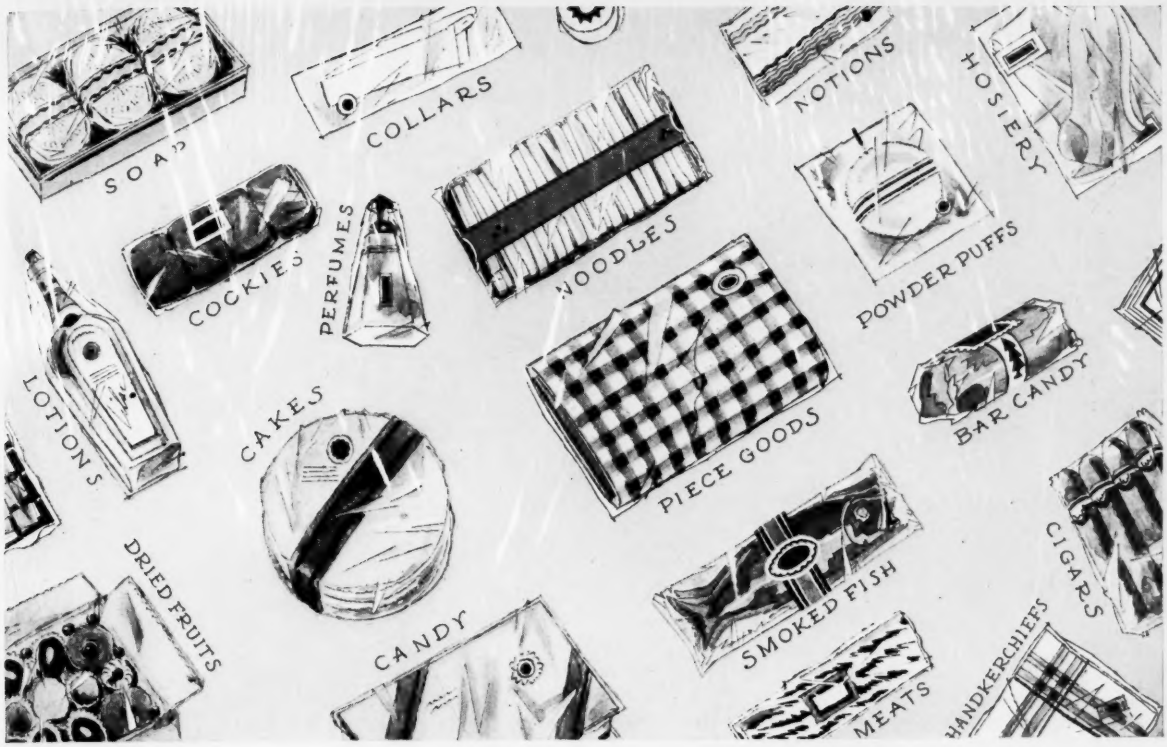

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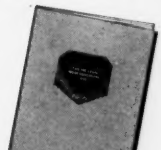

Send for a copy of our new descriptive booklet, "Cellophane, the Modern Merchandising Aid."

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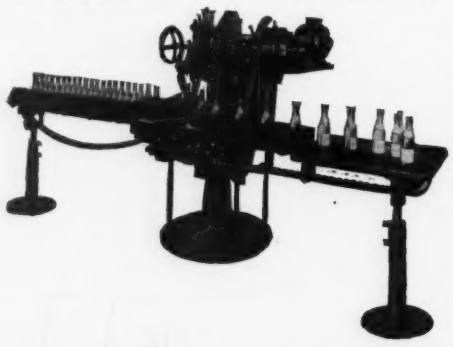

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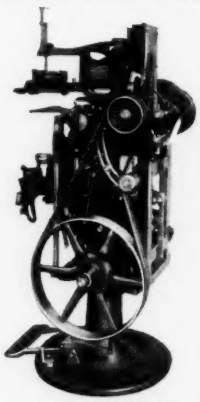

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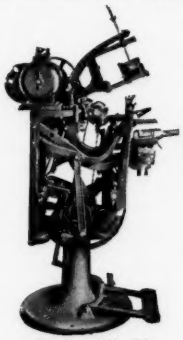

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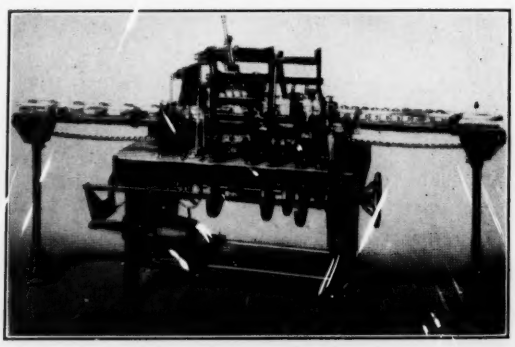

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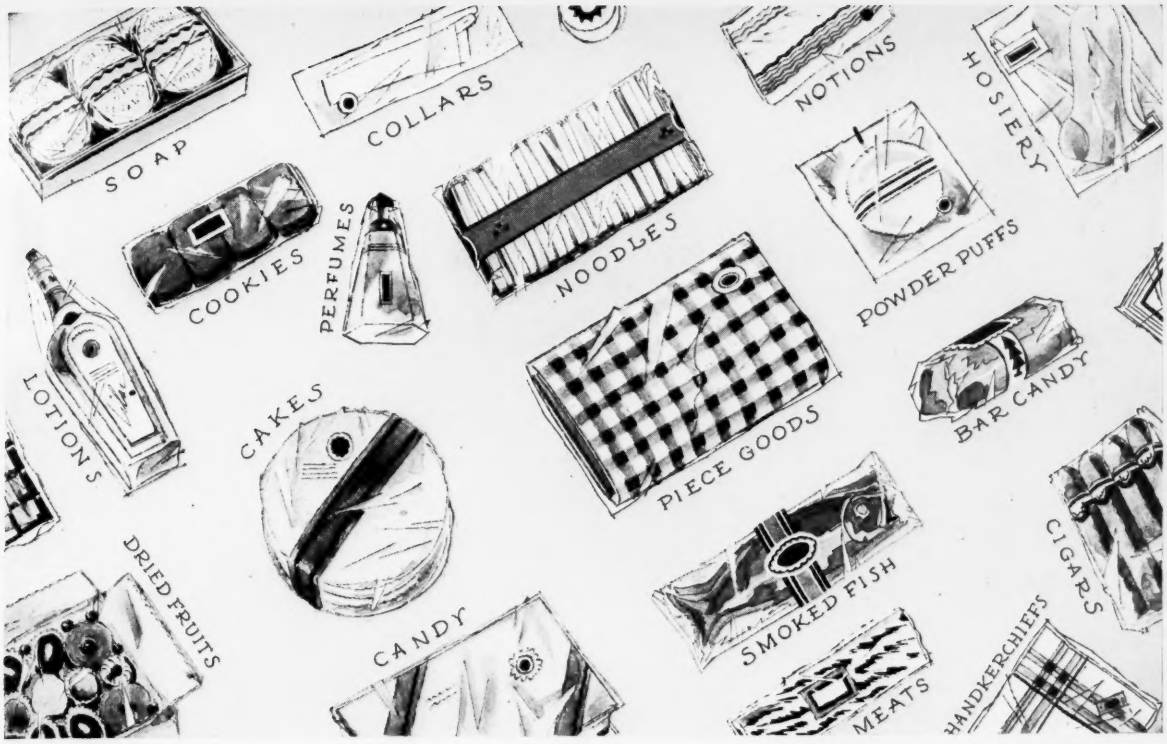

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J. L. FERGUSON COMPANY

JOLIET, ILLINOIS

ST. LOUIS NEW YORK LOS ANGELES

Manufacturers and Designers of Packaging Machinery

PRODUCTS:

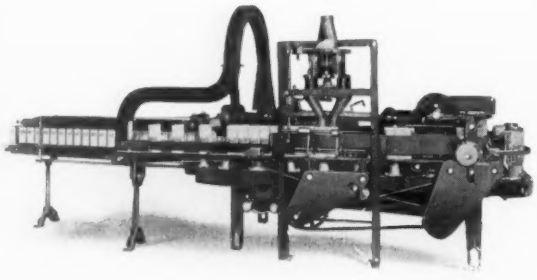
Carton Sealing Machines, Automatic Scales and Fillers, Carton Forming Machines, Automatic Case Packers, Container Sealing Machines, Labeling Machines, and Special Machinery for packaging purposes.

CARTON SEALING MACHINES:

The Ferguson Carton Sealing and Filling Machines were designed and developed for the packaging of food and other dry products in the most efficient and economical manner. Extensive investigation was first made as to the type of package that would offer the most advantages to both the packers and the consumers. Paper cartons properly proportioned and designed for sealing were generally acknowledged to be the most practical.

Ferguson machines were then made to meet the demand for automatic equipment that would embody all of the following outstanding features: simplicity in construction and operation, compact but all moving parts accessible, highest speed commensurate with accurate weights and tightly sealed cartons, adjustable for various size packages, and durability.

The Ferguson Carton Sealer is a combined top and bottom sealing unit, and is furnished with or without Automatic Carton Feeding device. It is also equipped with Volumetric Filler or Automatic Weighing unit, the

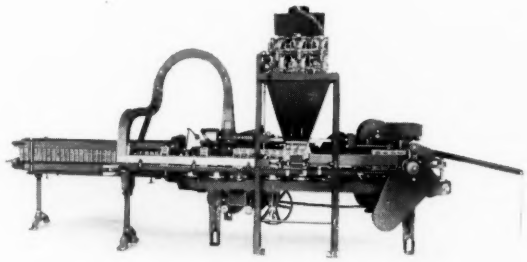


Left Side View of Ferguson Carton Sealing Machine with Volumetric Filler

latter of net or gross weight type, whichever is better suited for the product to be handled.

A production of sixty packages per minute can easily be obtained with a single unit, whether cartons are fed by hand or automatically. Commercially accurate weights and tightly sealed cartons are guaranteed.

Cartons are received in knocked down or flat form, squared and placed over partially hollow aluminum forms while in motion. As these forms then travel through the center of machine the top inner flaps are folded and the outer flaps opened, also spread with adhesive while passing under glue rolls. Immediately the outer flaps are folded and held under compression. By means of air produced with fan operated by a ¼ H. P.



Left Side View of the Ferguson Carton Sealing Machine with Automatic Net Weight Scales

high speed motor, the cartons sealed on one end are transferred through spout to opposite side of the sealer and conveyed under filler or scales.

When filled, the cartons are automatically released and plunged onto stools, which carry them again through center of machine for sealing of flaps. At the rear of sealer the filled and sealed packages then enter compression belts and when discharged are ready for packing into shipping containers.

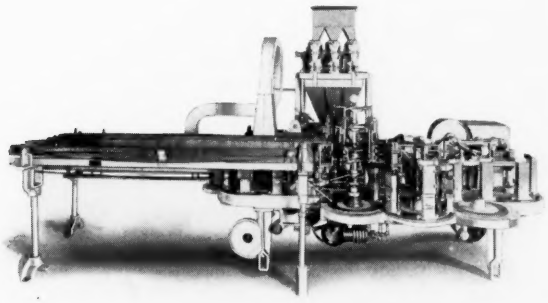
The Automatic Carton Feeding device is not a separate unit but is made a part of the carton sealing machine. Cartons in the knocked down form are placed into the magazine which holds approximately fifteen hundred. One by one they are released, opened, and placed over the aluminum forms. The vacuum used in transferring the cartons from magazine to the rotating cages is supplied by means of pump operated directly from sealing machine. Specially constructed cartons are not required.

The Volumetric Filler is intended for free flowing products, such as salt, soap powder, beans, popcorn, peas, etc., the specific gravity of which does not vary materially. This filler is easily and rapidly adjustable, and is so ingeniously designed that commercially accurate weights are guaranteed.

J. L. FERGUSON COMPANY

The filler has four rotating pockets, adjustable as to depth, and into which may be inserted measuring tubes for use when smaller packages are to be produced. While two of the rotating pockets are in the process of filling, the other two are discharging.

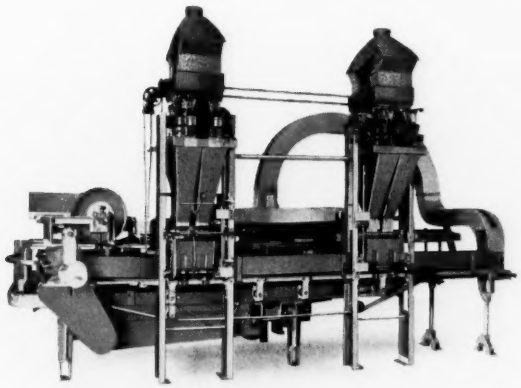
For the packaging of semi-free flowing products the Ferguson Net Weight Scales are used in connection with the Carton Sealer. These scales are furnished in from



Ferguson Carton Sealing Machine with Automatic Carton Feed and Net Weight Scales

four to eight units, making it possible to fill as many cartons at one dump, and allowing enough time to warrant accuracy in weights. Such products as coffee, bird seed, grass seed, cereals, etc., are handled very successfully with this equipment.

Two sets of weighing units as illustrated are also furnished with a single Carton Machine, making it possible to partially fill two or more cartons, then insert a prem-

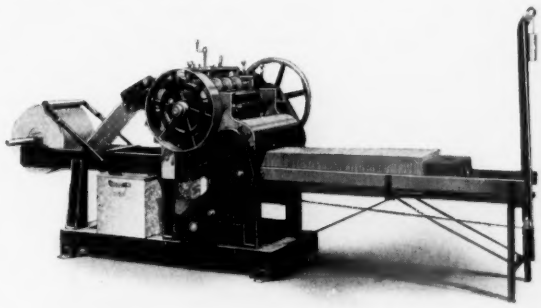


Right Side View of Carton Sealing Machine with Two Sets of Automatic Scales

ium, and finish filling at the second weigher. This type unit is generally used by packers of cereals, when it is desired to insert such premiums as chinaware, aluminum utensils, etc. All Ferguson Automatic Weighers permit the product to flow only when cartons are in proper place.

Automatic Gross Weight Scales are also manufactured and furnished with Ferguson Carton Sealers, and are recommended for the handling of such products as flour, where constant agitation is necessary. Three bulk and three dribble scales are used, therefore three cartons are always in the process of being filled. Same as when net weight type scales are used, a shaking device is made a part of the equipment so that product settles below score lines before top flaps of cartons are sealed.

A complete top and bottom sealer, with weighing unit or filler, requires floor space of only 4½′ wide and 16½′ long. From one to two-H.P. motors are sufficient for driving and are furnished with machines. When more than one size of cartons are to be handled, extra parts are furnished to suit. But little time is required to change from one size to another.



Right Rear View of Ferguson Carton Forming Machine

CARTON FORMING MACHINE:

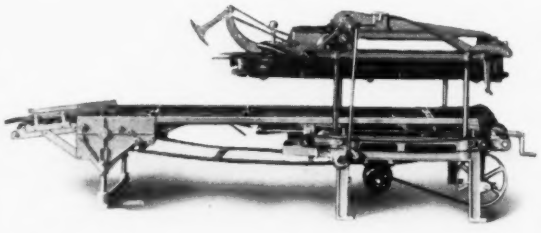
To the packer of tight-wrapped packages the Ferguson Carton Forming or Shell Making Machine offers a great saving. It is possible to obtain the chip board in any quality and size rolls wanted and manufacture shells on a tonnage basis. Thus the need of storing in large quantities, as well as the loss in damaged shells, is entirely eliminated. The operation of the machine is very simple. The chip board is fed from the roll, the edges trimmed, cut, scored, folded and side seam glued. The shells are then delivered in a knocked-down form. And to do this all, only one operator is required. Anywhere from 125 to 200 shells per minute can be produced with one unit. A three-horsepower drive motor is used. The machine requires floor space of 4½′ wide and 14′ long.

CONTAINER SEALING MACHINES:

Ferguson Container Sealing Machines are built in full automatic, semi-automatic, and hand glue models. These machines are for sealing the top and bottom flaps of paper shipping containers and are exceptionally practical in design and construction.

The full automatic sealer is equipped with a positive power-feeding device, which times the filled cases from

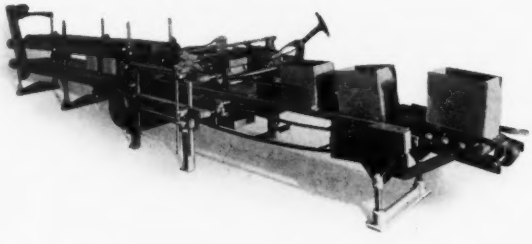
conveyor. As they travel through, the bottom outer flaps are opened, the top inner flaps are closed, adhesive is spread onto both top and bottom outer flaps at same time, the flaps then folded, and cases discharged into compression unit. When inner flaps of containers do not meet, the glue may be spread only where flaps contact. This is effected by means of an easily adjustable skipping device. An automatic safety device is also furnished as regular equipment.



The Ferguson Automatic Container Sealer without Dryer, Model "D"

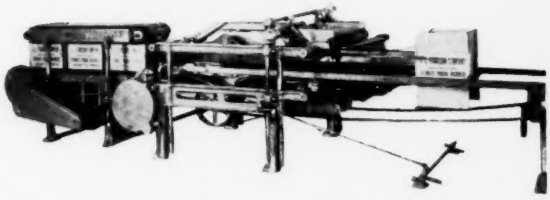
The dryer or compression unit is equipped with automatic start and stop control and operates intermittently, allowing maximum length of time for cases to remain under pressure. An outstanding feature is that both top and bottom belts are driven. While the automatic gluer will operate successfully at any speed up to 2,000 or more cases per hour, the length of the compression must be proportionate. The six-foot dryer is capable of a production of about 200 tightly sealed cases per hour.

These machines are designed for unusual flexibility, and are rapidly adjustable for various size cases within reasonable range. To change from one size case to another requires only about three minutes' time. No regular operator is necessary. A complete unit requires floor space of only 4′ wide and 16½′ long, unless longer than six-foot dryer is required for maximum demand.



The Ferguson Automatic Container Sealer, Model "D," with 16-Ft. Dryer

The Ferguson Semi-Automatic Sealer is similar to the above, but is intended for smaller output or where a sealer is necessary at end of each line. The automatic

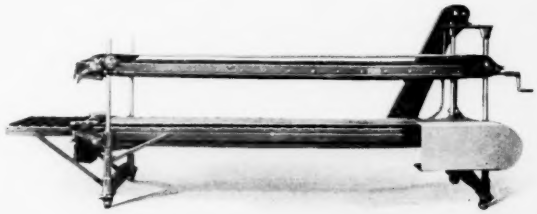


The Ferguson Semi-Automatic Container Sealer with 4-Ft. Dryer, Model "G"

feed and bottom flap opener is eliminated and cases are packed on package plate at inlet end of the gluer. When filled, the operator starts machine by means of foot trip and while case travels through sealer another one can be in process of packing. The machine operates intermittently at will of packer. A four-foot dryer is regular equipment with this type gluer and will handle the output of one packer or up to 150 average size cases per hour.

The Ferguson Hand Glue and Portable Type Sealer is a compression unit only and with it the adhesive must be spread on flaps with hand brush. It is equipped with feed table, automatic start and stop control, etc. Furnished in any length necessary for a given output.

Ferguson full or semi-automatic sealers have ½ H.P. drive motors as regular equipment. The compression units require motors of ½ H.P. or more, depending on length.

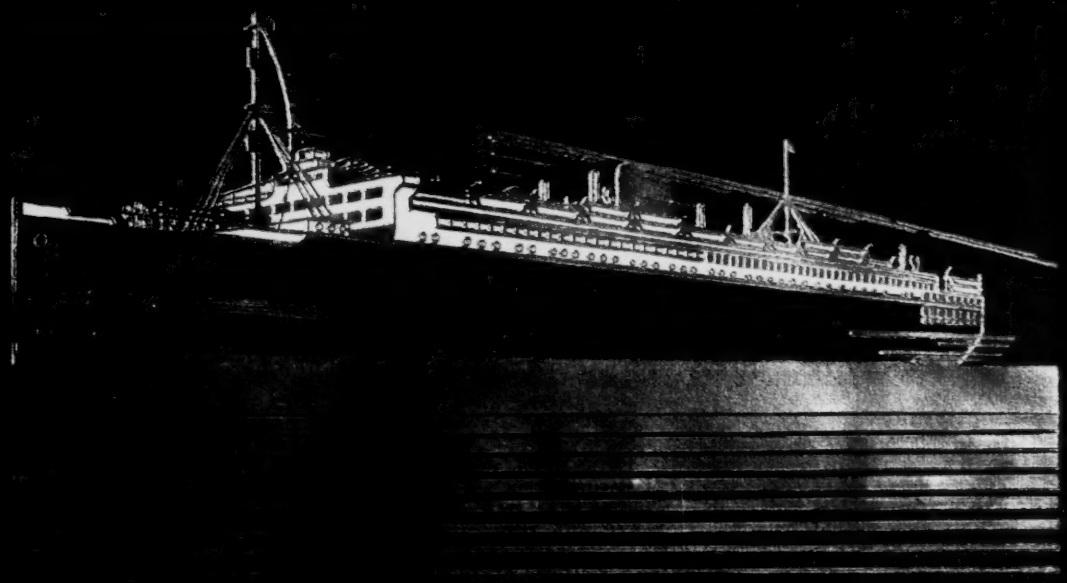


Ferguson Container Sealer, Hand Glue and Portable Type

SPECIAL MACHINERY AND EQUIPMENT FOR PACKING ROOMS:

Labeling Machines for paper cans,
Paper Cover Shrinking Machines,
Automatic Capping Machines,
Rolled Oats Compressors and Fillers,
Macaroni Drying Cabinets,
Tube Gluing Machines,
Dies for Punch Presses, etc.

Details of above equipment will gladly be given upon request. Also, Ferguson engineers will consult with you regarding any special packaging problems you may have.



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An analysis of the past year of package merchandising will reveal that sales contacts today depend upon immediate customer recognition of your package.

To provide your package with the dominant characteristics "The Golden Touch" as developed by the BRIGHTEN LEAF PROCESS is essential. Create consumer preference for your products by establishing the outward evidences of the quality of your products within.

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Brighten Roll Leaf

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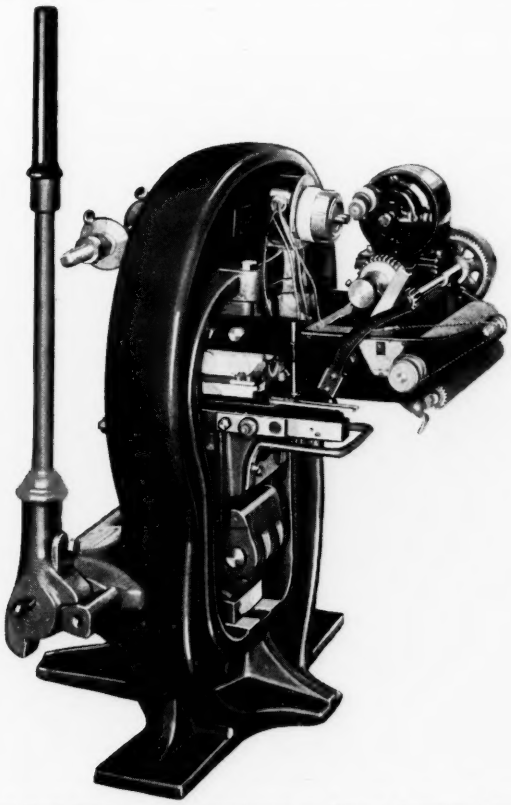
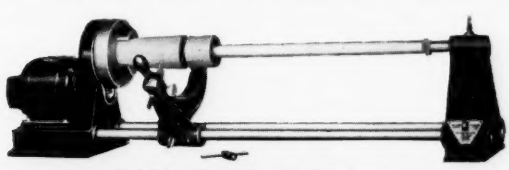
Imitation Gold, Silver and Colored hot stamping leaf in rolls.



Draw Feed Brighten Leaf Attachment on Krause Stamping Press

USES:

Used by modern box makers, bookbinders, pencil manufacturers, celluloid manufacturers, etc., to obtain decorative effects on boxes, wraps, labels, etc., and for trade-marking products. Brighten Leaf is supplied in gold, silver, bronze and a wide range of pigment and metallic colors. Is sold in master rolls 24″ wide by 100′ to 600′ in length or cut to any desired width. Can be supplied for stamping all materials used in connection with packaging. Samples, color chart and price list furnished upon request.



Brighten Leaf Cutting Equipment

Thermostatic Heat Control

BRIGHTEN LEAF ATTACHMENT:

Made to be attached to any upright press; also for Colt's Armory or Universal Type printing presses. The Brighten Leaf Attachment simplifies and speeds up production. Leaf is so gently and automatically fed that it will not tear. The attachment is of latest manufacture and is a self-contained unit operated by 1/10 H.P. motor; three draw feed; each roller operated independently. Length of pull can be adjusted from zero to 13″. All attachments automatic, requiring no attention from operator.

B. L. CUTTING MACHINES:

For cutting any desired width from the master roll. Saves time and money.

HEAT CONTROLLERS:

Devices for maintaining the necessary heat on stamping presses.

ELECTRICALLY HEATED HEADS:

Heating blocks or heads for stamping presses electrified.

Write for complete details of what Brighten Leaf can do for you.

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For carload stowage, shipments on skids, and very heavy cases.
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For heavy bundling and cases up to 400 lbs.
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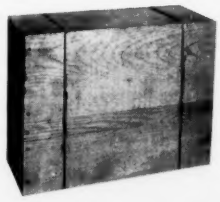
High tensile wires of smaller gauge for
light bundling and small cases.
Fine gauge coppered wires
for parcel post, express
and other light duty.

MODEL "TA"

The Model "TA" is designed for binding shipments in the parcel post and light express class. Shipments sealed by means of this equipment are outstanding for their neat and secure appearance and assure a protection against damage and pilferage that never fails.

MODEL "B"

The Model "B" is the fastest and most economical machine ever designed for applying steel reinforcement to packages of all sizes up to 150 or 200 pounds in weight. It is not limited to the tying of regularly shaped cases, but may be applied to barrels, pails, box shooks and other special uses.



MODEL "G"

The Model "G" is designed for reinforcing large cases containing heavy materials and is also used in applying Uni-lastic Stowage, the greatest development in carload bracing in the last century. This machine operates with 8, 9 and 10 gauge wire.

FORT ORANGE PAPER CO.

ESTABLISHED 1858
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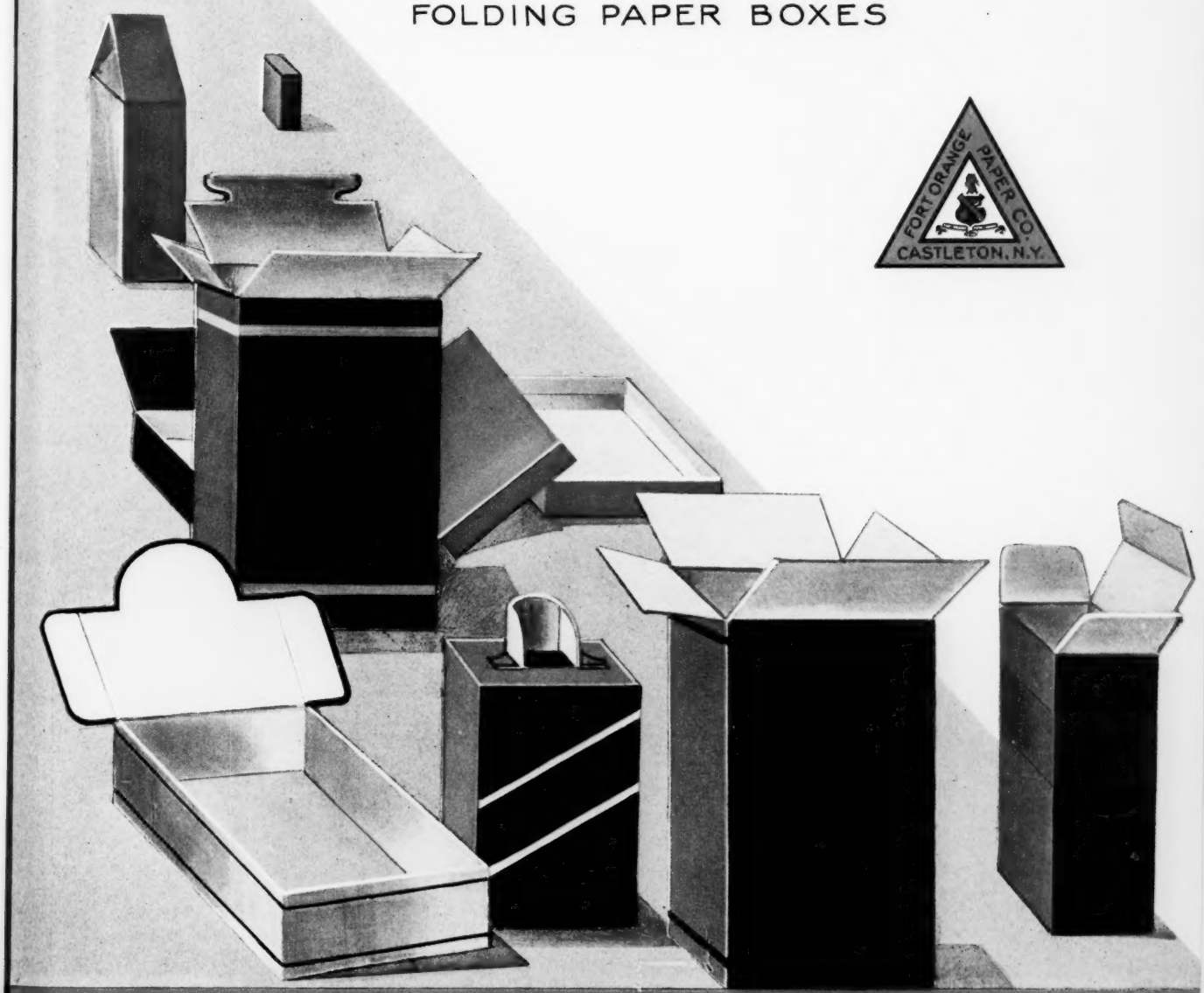

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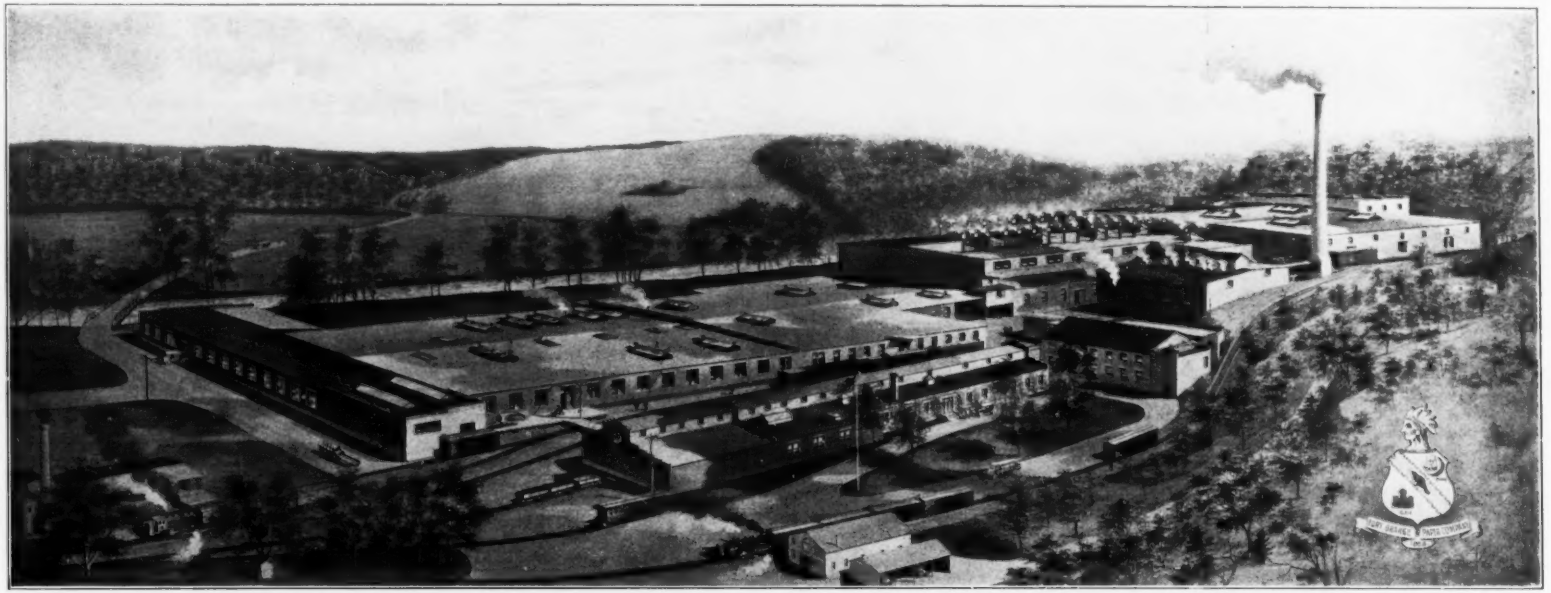

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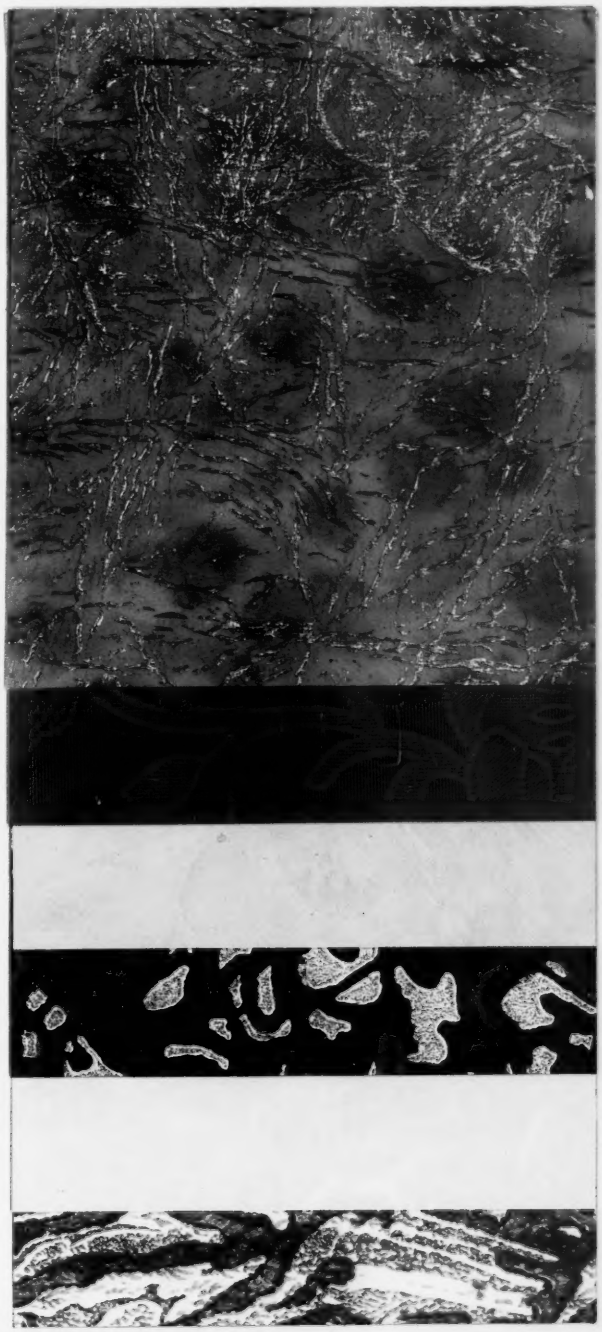

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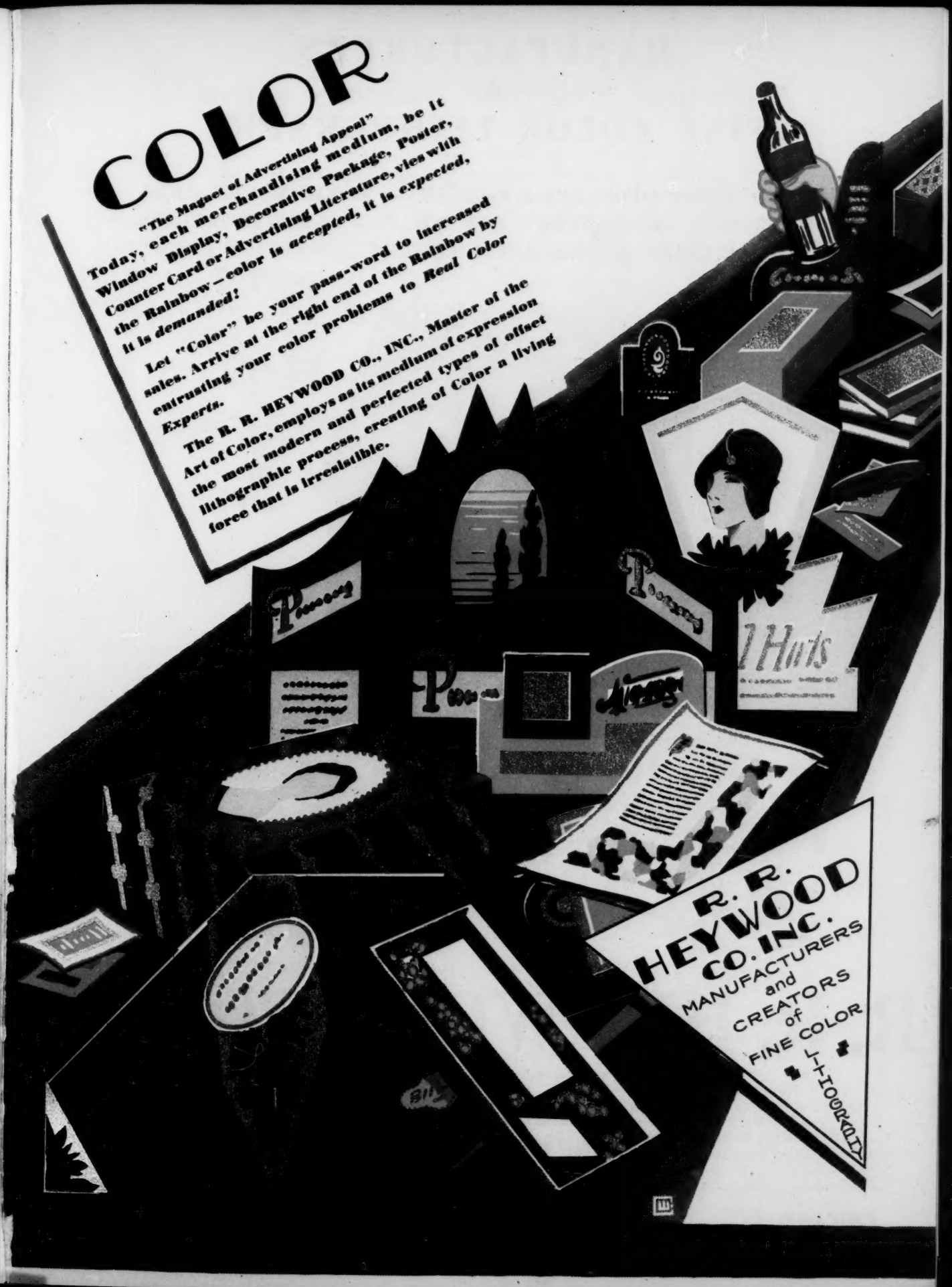
Our Glassine papers are Embossed in fifteen popular designs and will be found the best obtainable.

Write us for quotations and samples.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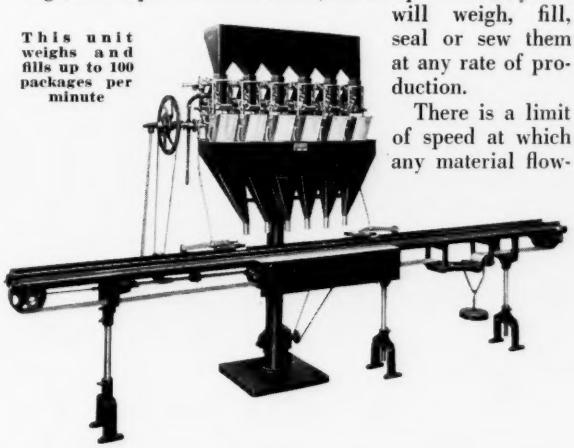
Designers and Makers of Automatic and Semi-Automatic Machinery for Weighing and Packaging dry materials of all kinds and Automatic Machinery for all types of sealing

Whether you pack in cartons, cans, paper or burlap bags, envelopes or cotton sacks, the Hoepner Unit System will weigh, fill, seal or sew them at any rate of production.



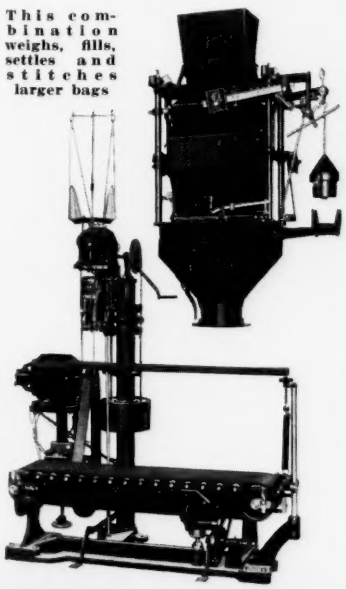
This unit weighs and fills up to 100 packages per minute

There is a limit of speed at which any material flowing by gravity can be weighed with maximum accuracy. Hoepner utilizes this principle in each single unit. Increased production is obtained by combining into one machine as many of these units as are necessary to get any desired output. No attempt is made to hasten the flow of material beyond this most accurate rate of speed.

A particularly valuable feature is the check weight beam, which makes it possible to change easily from one weight of package to another and to check the accuracy of weighing without the use of auxiliary scales.

BIG PRODUCTION WEIGHING AND FILLING

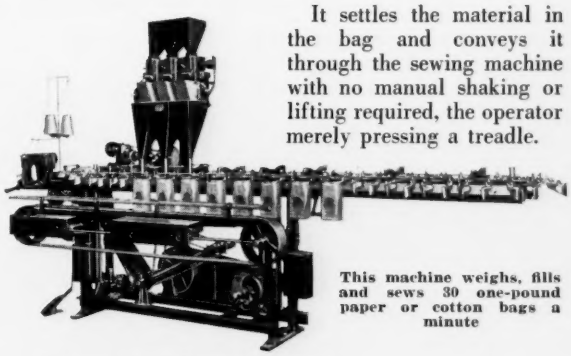
Shown above is the fully automatic six-unit Hoepner Weigher and Filler, a combination designed for large production and which will handle any free-flowing material up to 100 packages per minute. Where as great an output is unnecessary, combinations with fewer units can be supplied, without the conveyor belt, if desired.



This combination weighs, fills, settles and stitches larger bags

WEIGHING, FILLING, AND STITCHING LARGE BAGS

The Hoepner Combination Weigher, Bagger and Stitcher shown at the left is for handling all free-flowing materials packaged in larger bags.

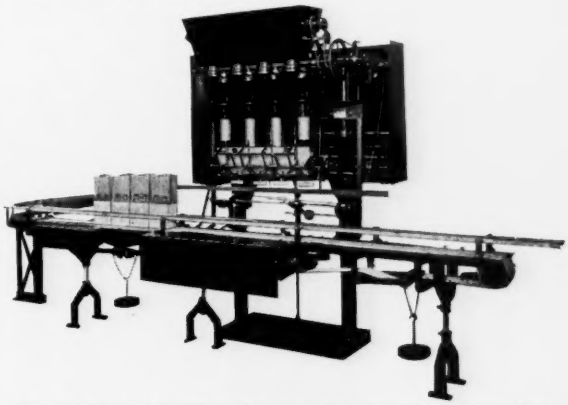


It settles the material in the bag and conveys it through the sewing machine with no manual shaking or lifting required, the operator merely pressing a treadle.

This machine weighs, fills and sews 30 one-pound paper or cotton bags a minute

WEIGHING, FILLING, AND STITCHING SMALLER BAGS

The Hoepner combination shown above weighs, fills, and stitches paper or cotton bags. It has two conveyors. One conveyor is equipped with holders which carry the empty bags and act as forms while the bags are being filled. When the empty bags come into the filling position, they rest on the other conveyor, eliminating any strain on the holders. As the filled bags move away from the filling spouts, the holders are automatically withdrawn. An operator folds the tops of the bags and runs them through the stitching head.



For weighing and filling dry materials that do not flow freely. Made in sizes for any desired production

FOR MATERIALS THAT DO NOT FLOW FREELY

Shown above is a Hoepner machine for automatically weighing and filling dry materials that do not flow freely. This unit is made in sizes that will give any desired production and is supplied with equipment suitable for filling bags, cans or cartons.

Other Hoepner combinations weigh and fill any size carton from 4 ounces to 4 pounds and seal cartons, top and bottom, all in one continuous operation.

Whatever your packaging or bagging problem, Hoepner can help you. Send us sample of package and material and a brief outline of your needs for constructive aid that will speed up production and cut packaging costs.

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Manufacturers of Automatic, Semi-Automatic and Hand Operated Filling Machines

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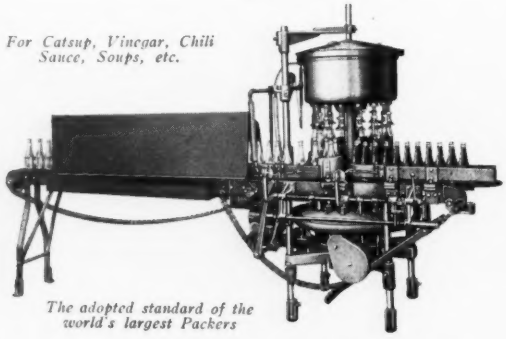
New "H.E." Model "Haller"

14 TUBE HIGH SPEED ROTARY FILLING MACHINE



Capacity 90 to 96—14 oz. Catsup per Min.

We make

Models to suit every requirement
Bench, Gang and Rotary types
Variety of sizes, Hand or Automatic

For all kinds of light or heavy liquids. Catsup, chili sauce, soups, vinegar, oils, medicines, waters, ink, etc.

We fill bottles, cans, jugs, from 3-oz. to 5-gal.

The New "Haller" Filling Machines will be a revelation to you—

25 Years' Experience at your service

FAST, ACCURATE RELIABLE

NO DRIP NO JAMMING

Bulletins describing the following machines or complete catalog will be sent on request:

Model H-B 18-Tube Automatic High-Speed Rotary Filling Machine

Model H-S 18-Tube Automatic High-Speed Rotary Filling Machine for Soups

Model H-E 14-Tube Automatic High-Speed Rotary Filling Machine

Model E 14-Tube Hand Feed Automatic Discharge Rotary Filling Machine

Gang Filling Machines

Models M and N 3-, 5-, 6- and 9-Tube Bench or Table Type Filling Machines

Models R and T-R 4- and 6-Tube 5-Gallon Filling Machines

"Haller" Fruit and Berry Washer

If you are filling bottles or containers of any kind with any kind of light or heavy liquid, either hot or cold, the chances are you can save *big money* by doing it automatically with one of the perfected Haller Fillers, built for the purpose.

HORIX MANUFACTURING COMPANY — CORLISS STATION, PITTSBURGH, PA.

JOHNSON AUTOMATIC SEALER CO., LTD.

Manufacturers of Packaging Machinery

BATTLE CREEK, MICHIGAN

NEW YORK CHICAGO LOS ANGELES LONDON

PRODUCTS

Carton Sealing Machines with or without Automatic Carton Feeders, Gross Weight Scales, Net Weight Scales, Volumetric Fillers, Wax and Glassine Wrapping Machines, Carton Lining Machines.

GENERAL INFORMATION

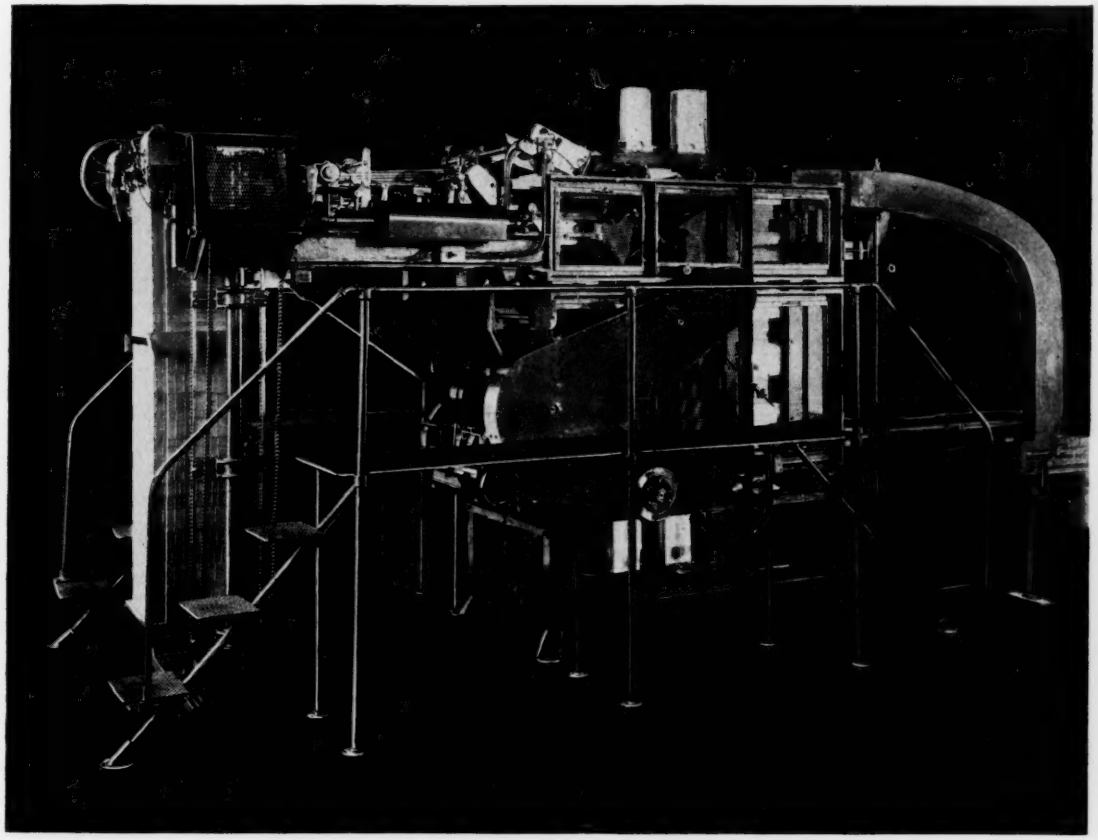
Johnson Carton Sealing Equipment is divided into two classes:

1. Greater Capacity or High Speed Machines, capable of a production of 60 or more bottom and top-sealed cartons per minute.

2. So-called 30 per minute machines, which are capable of a production of 30 to 40 bottom and top-sealed cartons per minute.

The Greater Capacity Unit consists of either a Combination Automatic Carton Feeder and Bottom Sealer, or a Hand-Fed Bottom Sealing Machine, and a Double-Entry Top Sealing Machine. The Combination Automatic Carton Feeder and Bottom Sealer is so constructed that it will handle cartons in the flat—that is, before the side seam is glued—feeding these cartons automatically from a magazine in the front of the machine down around the forming blocks, sealing the side seam and the bottom flaps.

The method of feeding the flat cartons into the machine and around the forming blocks is such that a positive register at both the bottom and top of the carton is obtained, thereby insuring a square tight seal on the bottom and top flaps of the carton, eliminating any chance of sifting packages. The machine being entirely automatic, the services of an attendant are required only at intervals to replenish the supply of cartons in the magazine, which contains enough cartons to operate the machine from three-quarters of an hour to an hour, depending, of course, on the weight of the board of which the cartons are made. This fact alone enables the machine to be operated with marked economy from a labor standpoint. Also, by handling cartons in the flat



Combination Carton Feeder and Bottom Sealer

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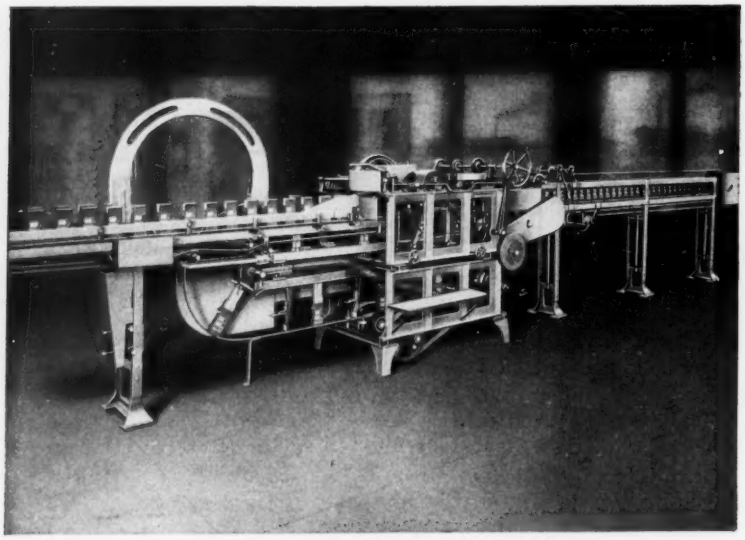


Combination Bottom and Top Sealing Machine

before the side seams are glued, a considerable saving is possible, due to the fact that cartons in this form can be purchased at a lower price than cartons which have the side seams glued. This saving, of course, varies according to the size of the carton.

This machine will produce, except on unusually large sizes, 70 to 75 bottom-sealed cartons per minute.

Johnson Hand-Fed Bottom Sealing Machines are built for sealing the bottom flaps of the standard knock-down cartons. They are of the continuous motion type, thereby eliminating the element of excessive wear through the incessant stopping and starting of the machine. They are equipped with special rotary folders, which insure a square and tight seal. The speed of these machines is from 40 to 80 cartons per minute, depending on the size of the carton. For speeds over 50 cartons per minute, they require two operators to feed the cartons on the forming blocks.

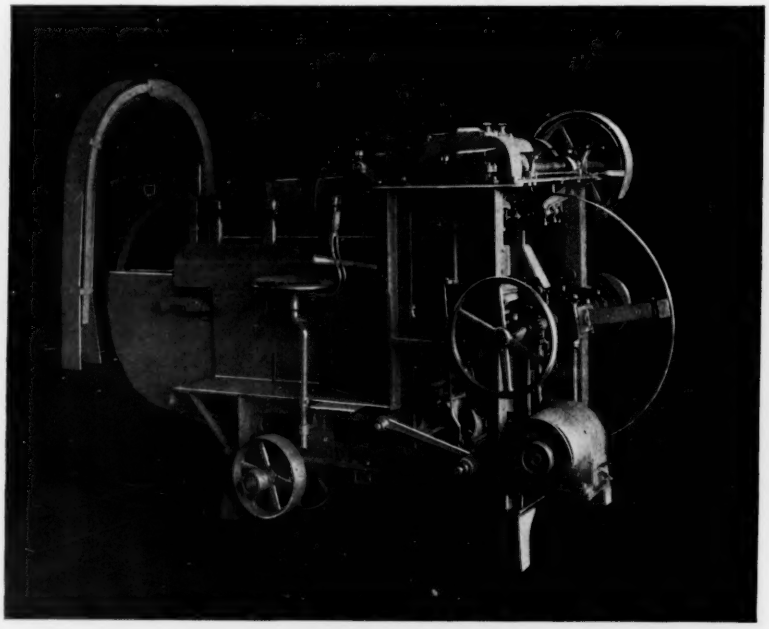
Johnson Double-Entry Top Sealing Machines are of the continuous motion type and are fitted with a special double-entry device, which makes it possible to bring two lines of packages up to the Top Sealer where, instead of speeding up the device transferring the filled cartons from the intake belt to the machine, thereby causing the material to be thrown up over the score line by the violent motion at high speeds, one package enters the package transfer on one side while a package is being pushed onto the carrier from the other side. In this manner, when the package transfer returns from pushing one carton onto the package carrier of the machine, it brings another package in from the other side onto the next package carrier, thereby eliminating any waste motion. This machine can also be furnished with a special sack-folding attachment where it is desired to fold down the liner in a lined-package, such as is used for many products packed in cartons. This machine is capable of a production of up to 80 cartons per minute.

The 30 Per-Minute Sealing Equipment, which is capable of a production of 30 to 40 bottom and top-sealed cartons per minute, consists of a Combination Bottom and Top Sealing Machine. This machine embodies all the Johnson features contained in the High Speed Bottom and Top Sealing Machine, but in this particular machine both the bottom and top sealing functions are combined in the one machine by means of alternating carton forms and carrier arms. An operator feeds the knock-down cartons on the forming blocks, which carry them under the glue rolls and through the folders where the bottoms are sealed. These forms then pass around under the machine onto the pressure roll raceway where the glued flaps are kept under pressure until the glue is dry. They are then blown through a carton chute, landing right side up on the belt which carries them under a filling mechanism or onto a belt for hand-packing. After being filled, they are transferred across to another belt which carries the packages into the Top Sealer.

This machine is capable of a production of 30 to 40 packages per minute, depending upon the size of the cartons.

All Johnson Sealing Machines are adjustable within a reasonable range for various sizes. The time required to make the changes for handling the various size cartons varies from one to three hours, depending upon the number of machines in the line.

All of the above sealing equipment is designed for operation in connection with either Gross Weight or Net Weight Scales, thereby forming a full automatic unit,



Hand-Fed Bottom Sealer

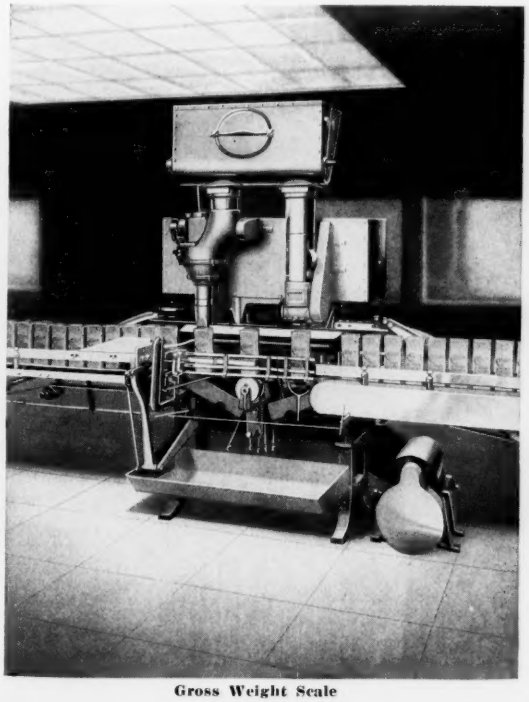
which is capable of bottom-sealing, filling, weighing, and top-sealing the cartons. Lay-outs of these complete units, which are most economical in the use of floor space and which can be adapted to practically any packaging plant, can be furnished upon request.

JOHNSON AUTOMATIC WEIGHING MACHINES

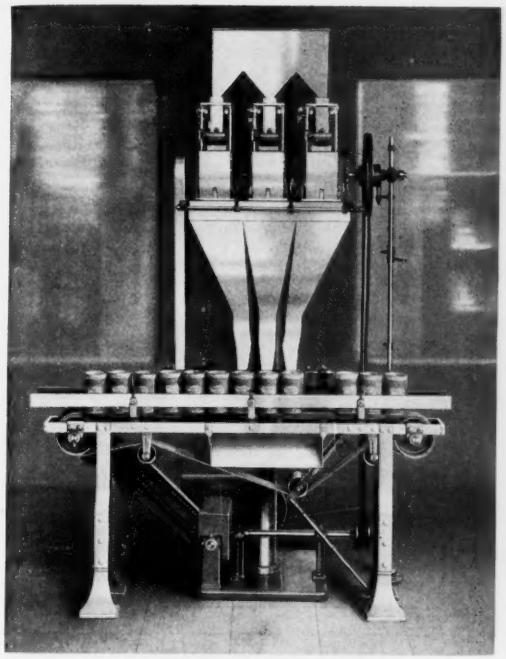
Johnson Weighing Machines are divided into two classes:

1. Gross Weight Scales for use where the material to be handled is non-free-flowing, such as soap flakes, soap chips, soap powder, starch, flour, and cereal foods of many kinds.
2. Net Weight Scales for use with free-flowing materials, such as sugar, salt, rice, tapioca, and many other products.

Johnson Gross Weight Scales are fully automatic in operation and are provided with safety devices so that if the supply of cartons to the scale is interrupted, the machine automatically stops operation, resuming it again when the supply of cartons is again resumed from the bottom sealer. Special attention has been given to making the parts of this machine accessible for repairs and adjustment. For use with soap flakes or other light materials, it is furnished with a plunging device, which insures the product being settled into the carton far enough below the score line so as not to interfere with proper sealing. This scale will weigh and fill from 25 to 35 packages per minute with a weight tolerance of 1/16 to 1/8 ounce plus or minus, according to the size of the packages and the material to be handled.



Gross Weight Scale



Net Weight Scale

Johnson Net Weight Scales are built on the unit principle, that is, each part—hoppers, scale beams, weighing buckets and operating mechanism—is a complete unit in itself, thereby enabling a machine to be built up of a plurality of units, whereby a speed may be obtained up to 90 packages per minute. For handling short-cut macaroni, a special Net Weight Scale is furnished, which is fitted with double buckets, allowing a continuous and uniform stream of macaroni to be delivered and weighed, thereby permitting maximum speed to be obtained.

JOHNSON AUTOMATIC WAX WRAPPING MACHINES

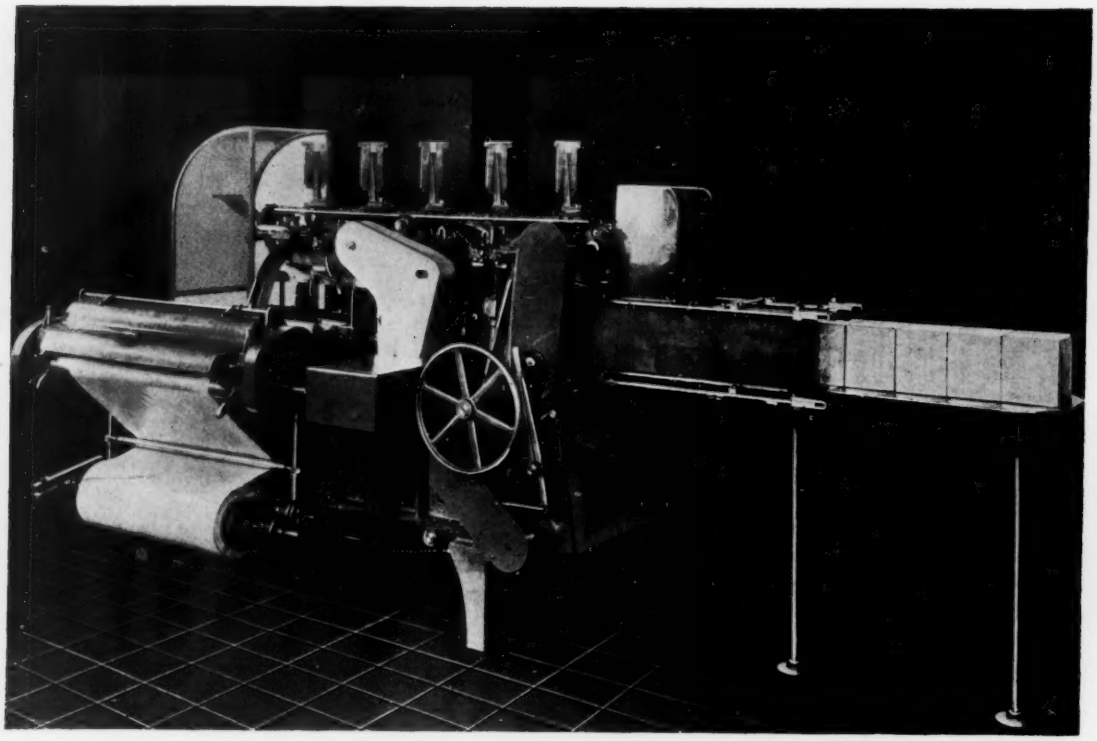
Johnson Wax Wrapping Machines have long been standard equipment in plants which require absolute protection for their product. This machine wraps a carton in wax paper, hermetically sealing it by means of heat. It is fully automatic in construction, packages being brought to it from the last packaging operation by means of the intake conveyor, from whence they are fed into the machine, wrapped, and discharged onto the packing table ready to be packed in a shipping container. The machine is extremely economical in paper consumption, as it is so designed that no paper is cut unless there is a package going through the machine.

A package wrapped on this machine is absolutely protected against atmospheric changes, the attacks of insects, dusts, and other conditions which tend to cause rapid deterioration.

This machine is furnished in three sizes, each one of which is adjustable with a reasonable range of various size packages. It can be operated at a speed of from 40 to 70 packages per minute, depending on the size and style of the package.

The above constitutes only a general description of the machines manufactured by this company. It should be understood, however, that any of these machines can be furnished to handle any special product which is put

JOHNSON AUTOMATIC SEALER CO., LTD.



Wax Wrapping Machine

up in cartons. The Company maintains an efficient Engineering force, whose services are always at the disposal of the manufacturer with packaging problems, and it welcomes inquiries from any manufacturer who is interested in equipment for automatically packaging any sort of material in cartons.

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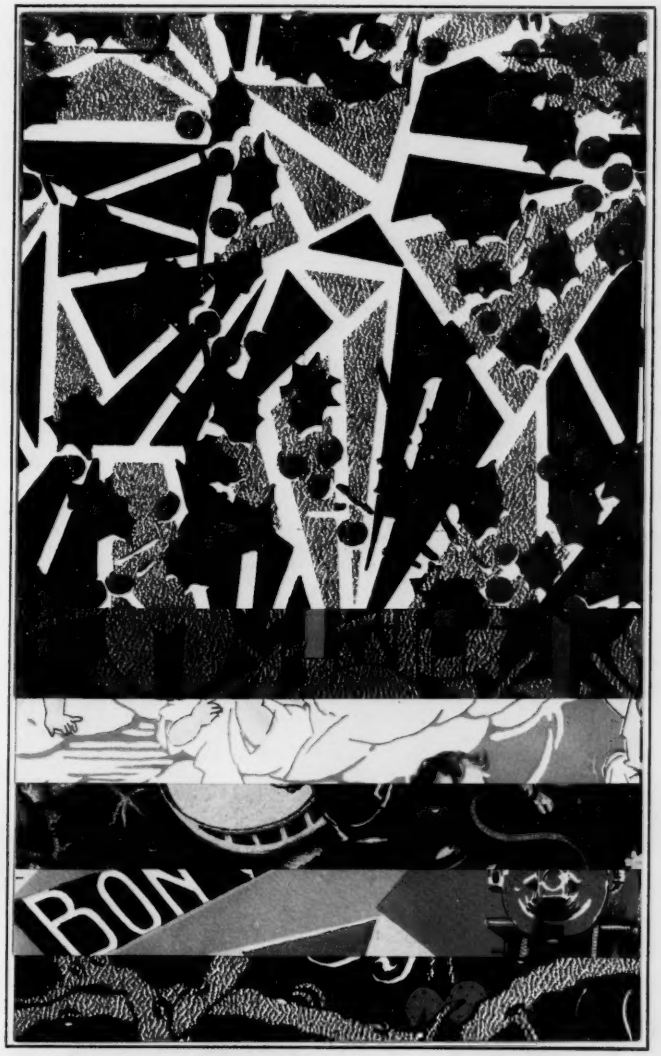

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KALAMAZOO VEGETABLE PARCHMENT COMPANY

KALAMAZOO, MICHIGAN

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KVP PRODUCTS: Genuine Vegetable Parchment Butter Wrappers, Butter Tub Liners, Ice Cream Wrappers, Ice Cream Can Squares, Milk Can Tops, Cheese Wrappers, Carton Sealing Papers, Extra Transparent Waxed Papers, Delicatessen Paper.

KVP GENUINE VEGETABLE PARCHMENT: Is accepted as the ideal protection for butter, ice cream and other moist food products. It is absolutely free from any odor or taste, wet or dry, is grease-resistant, and it will not go to pieces or lose its strength when wet. It will protect your butter or ice cream against foreign odors or tastes, and will keep it fresh, clean and wholesome.

BUTTER WRAPPERS: Cut to any size desired, plain or printed, in one, two or three colors with your own special imprint with water-proof, grease-proof and brine-proof inks. Our artists will be glad to make up any special design for your exclusive use on printed butter wrappers, following your own ideas.

BUTTER BOX LINERS: Of KVP Genuine Vegetable Parchment, can be furnished in any size sheet or roll desired.

BUTTER TUB LINERS: Are cut in special curved shape to fit standard butter tubs.

MILK CAN TOPS: Cut from 40 lb. or 50 lb. basis KVP Genuine Vegetable Parchment. Furnished plain or printed, in sealed packages or boxes of one thousand sheets each or in sealed packages of five hundred sheets or two hundred and fifty sheets each. Standard size sheets are 11 x 11.

CHEESE WRAPPERS: Cut from KVP Genuine Vegetable Parchment, plain or printed in one, two or three colors, are furnished in any size sheet desired.

ICE CREAM BRICK WRAPPERS: An attractive, pure white wrapper of KVP Genuine Vegetable Parchment which strips well from the product. Wrappers may be furnished in any size desired, either plain or printed in one, two or three colors with your special design. Packed in sealed packages of one thousand sheets each.

ICE CREAM CAN SQUARES: Cut from pure white KVP Genuine Vegetable Parchment. May be printed with names of flavors on corners of sheets. Packed in sealed packages of one thousand sheets each.

PARCHMENT ROLLS: Wound from KVP Genuine Vegetable Parchment, can be furnished in 9″ diameter, any width desired. Pony rolls, 5″ in diameter, wound from 30 lb. basis. Parchment can be furnished in widths of 6″, 7½″, 9″ or 12″, packed forty rolls to the standard shipping case.

CARTON SEALING PAPERS: KVP Carton Sealing Papers have long been recognized as standard for automatic machine use. Once sealed they "stay put". Every step in the manufacture of our Carton Sealing Papers is watched with jealous care.

EXTRA TRANSPARENT WAXED PAPER: The trade will be pleased to know that we can furnish Waxed Paper with perfect sealing qualities with an unusually high degree of Transparency. The process is our own. Any self-sealing grade can be treated.

KVP DELICATESSEN: A food protection paper that is well liked by the Grocer, Butcher, Delicatessen Store, etc., as a general utility sheet in the store. They like it because:
It protects food; is moisture-proof; strips well; does not go to pieces readily when wet; always is free from odor.

PROSPERITY WATER-PROOFED PAPER: A new, exceedingly strong sheet, which will not stick to meat—is pliable and has an appetizing color. Made especially for wrapping fresh meat or lining cartons where moisture-proofness and durability is needed.

WHITE OILED LOIN PAPER: All bleached—slow-cooked Spruce fibre, oiled with refined white oil.

MOISTURE-PROOF: Made especially for wrapping Pork Loins. Keeps loins fresh, dry and bright. Free from leaky joints, as shown by many tests. The product breathes — no sweating.

NATURAL COLOR WAXED PAPER: An exceedingly strong sheet made especially for wrapping green hams and bacon for the freezers. Used wherever a strong, pure, well waxed, air-proof paper is wanted. Has natural color, long fibre mischterlich. Is deodorized and doubly washed. Waxed with high melting point wax.

RESEARCH LABORATORY: *Our fully equipped Research Laboratory, in the hands of experts, is at your service on any of your packaging problems.*

Milk Can Tops — Ice Cream Covers — Parchment Rolls — Butter Tub Liners — Delicatessen Paper — Carton Sealing Papers — Butter Wrappers — Cheese Wrappers — Ice Cream Brick Wrappers

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Profitable - *with* Latham

MONITOR CONTAINER END STITCHER
(Illustrated above)

As the name implies—a simple, compact, easily-operated machine for stapling the ends of fibre and corrugated containers. Occupies only about four sq. ft. of floor space. Works at a speed of 1,500 to 3,000 containers a day, but affords definite and material economies to the concern using as few as 250 containers a day. No skilled help needed—anyone can run this machine. Cost of stitching is insignificant, the chief item being wages of operator distributed over thousands of boxes. And the big savings are in the possible output, and the floor space you save by buying your containers "knocked down," and setting them up on the Monitor, only as needed.

MONITOR No. 20 BOX STITCHER
(Illustrated below)

Ten thousand boxes a day can be stitched on this modern, high speed stapling machine. Anyone can run it expertly with only a few hours' practice. Saves from 40% to 60% of the cost of setting up paper boxes by any other method, cuts packing expense materially and assures stronger, better containers.

Built like a fine automobile—every part machined to a precision seldom approached in this type of machinery. Efficient to the highest degree—simple, positive, dependable—no springs, cogs or ratchets to slip, miss or get out of order—simple as A, B, C in every respect—with a lifetime of perfect, economical performance assured by its correctness of principle and the unusual durability that is fabricated into it.

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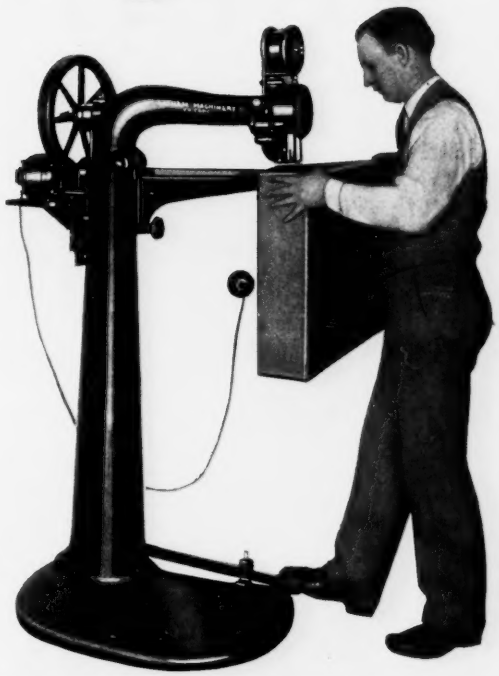
- Packaging Machines



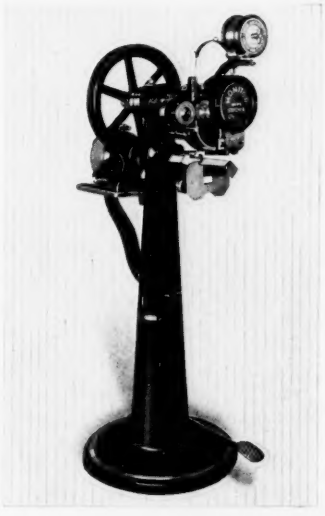
LATHAM PRODUCTS

For thirty-five years Latham has specialized in the designing and building of Monitor Wire Stitchers for the stitching of fibre and paper boxes. This experience has afforded us contact with an infinite variety of stitching and packaging problems, and has given our Engineering Department a practical expertness on the subject. This corps of packaging specialists will be glad to submit recommendations and advice without obligating you.

MONITOR CORNER BOX STITCHER

(Illustrated below)

The Monitor Corner Box Stitcher places a right-angle staple around the corners of the box—gives it reinforcement at the point of most strain—gives it extra strength to stand the bumps and jars of handling and transit. Its use is much more economical in operation and greater in speed than a paper stay or metal edge machine—and it produces incomparably better, stronger boxes. Simple and compact. Occupies little space. Anyone can operate it, and there is nothing to get out of order or require skilled mechanical attention.



MONITOR No. 30 BOX STITCHER

(Illustrated above)

This machine is the same as Monitor No. 20 except for the clearance between the stand and the clinching point, which is 20″ instead of the 12″ on the No. 20. This greater clearance permits the stitching of larger, deeper boxes, although smaller boxes also can be speedily handled. It has the same durability, the same simplicity and the same ease of operation that characterizes all Monitor Stitchers. Its speed depends upon the skill of the operator, but anyone soon learns to run a Monitor at a rate of ten to twenty boxes a minute.

SEND FOR LITERATURE

Interesting literature is available regarding the machine shown here as well as the other Monitor products mentioned. Send for it, specifying your particular stitching problems, and we shall be glad to discuss an economical solution without obligation to you.

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Filling Machines for liquid and semi-liquid products.
Jar and Bottle Rinsers.
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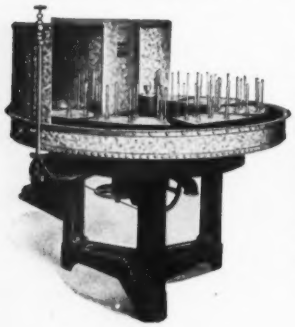
Conveyors.
Filters.
Pumps.

Engineers for the planning and equipping of complete bottling and packaging plants.

VISCO FILLING MACHINE:

For preserves, jellies, jam, apple butter, mustard, salad dressing, honey, condensed milk. Also such products as: paint, varnish, salves and other materials filled in a semi-liquid state. Absolutely clean and accurate filling. Quickly adjusted for different sizes. Easily cleaned. Fills jars, cans, bottles and tumblers. Capacity: 30 to 50 containers a minute. We also make machines for mayonnaise, creams and products filled cold.

AUTOMATIC JAR AND BOTTLE RINSER:

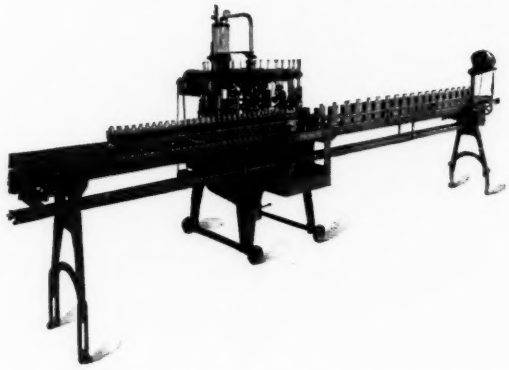


For cold or hot water rinsing, or hot water rinsing and steam sterilization. 40 to 100 bottles a minute. Hood and tank of heavy galvanized iron. Patented central water-distributing valve guaranteed never to leak. Motor, ¼ H.P. Other types of Rinsers shown in our special booklet.

LIQUID FILLING MACHINES:

We make over twenty types and sizes of vacuum and pressure filling machines—automatic, semi-automatic and hand-operated; for practically all kinds of liquids and containers; for any production desired. Catalogs giving full information furnished on request.

AUTOMATIC ROTARY VACUUM FILLING MACHINE AND DISCHARGE CONVEYOR:



For filling light and heavy liquids of all kinds, such as medicines, tonics, emulsions, extracts, catsup, vinegar, syrups, etc.

Capacity: 40 to 140 bottles a minute. Clean, accurate filling without waste. Bad bottles automatically detected and skipped.

Made in four sizes: 8-tube; 12-tube; 18-tube; 24-tube.

BELT CONVEYORS AND PACKAGING TABLES:

Belt conveyors of any length with belts 4″, 6″, 7″, 8″, 10″, 12″, 18″, 24″ wide. Conveyors with belts 10″ or wider, are furnished with working tables if desired. Cooling belts for products filled hot.

FILTERS:

For clarifying medicines, extracts, syrups, vinegar, perfumes, fruit juices, oils and similar products. Fourteen types and sizes of filtermasse filters, paper sheet filters, cloth filters. Our catalog gives full details.

Special rotary and centrifugal pumps for use with filters, and for other purposes.

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Made in America

We are able to offer for your inspection and consideration The Sunrise Line of exclusively American-made papers.

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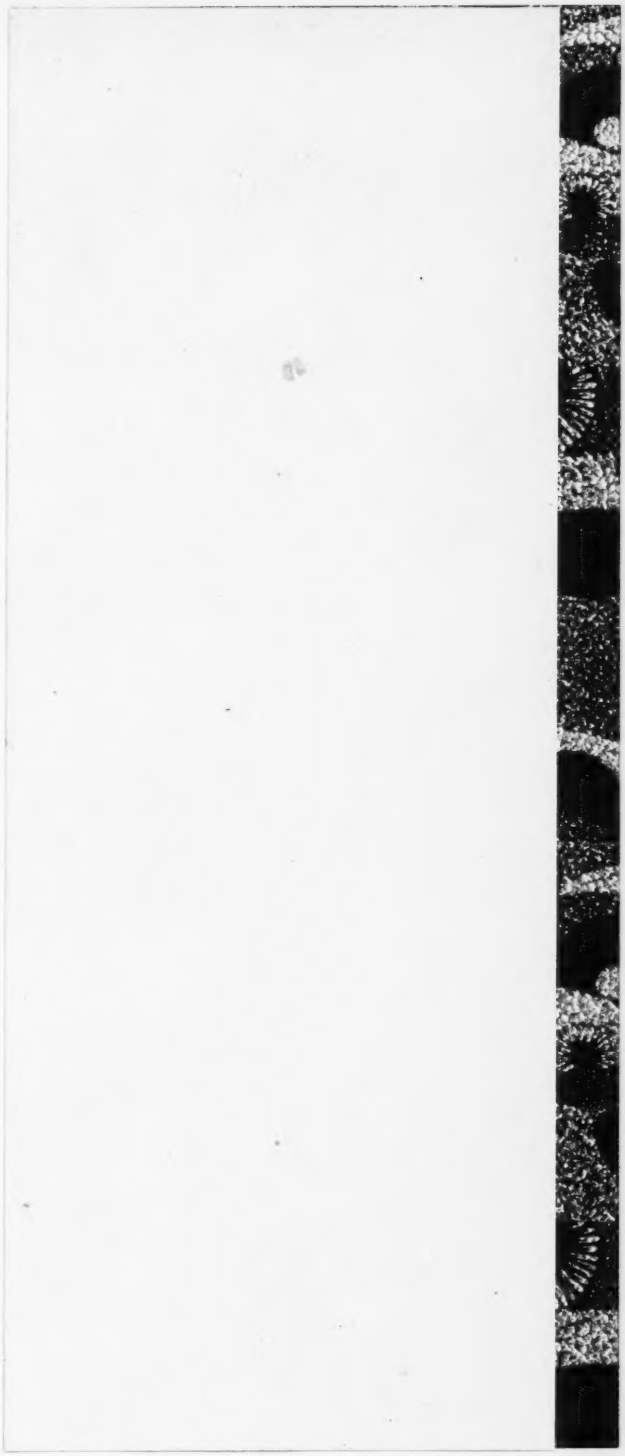
Original creations for your exclusive use may be had.

Stock papers range in price from $3.50 to $22.00 per ream.



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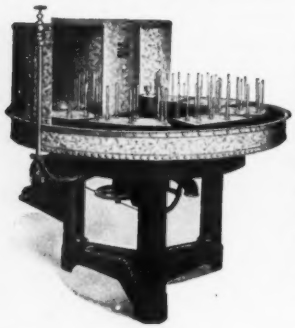
Corking Machines.
Conveyors.
Filters.
Pumps.

Engineers for the planning and equipping of complete bottling and packaging plants.

VISCO FILLING MACHINE:

For preserves, jellies, jam, apple butter, mustard, salad dressing, honey, condensed milk. Also such products as: paint, varnish, salves and other materials filled in a semi-liquid state. Absolutely clean and accurate filling. Quickly adjusted for different sizes. Easily cleaned. Fills jars, cans, bottles and tumblers. Capacity: 30 to 50 containers a minute. We also make machines for mayonnaise, creams and products filled cold.

AUTOMATIC JAR AND BOTTLE RINSER:



For cold or hot water rinsing, or hot water rinsing and steam sterilization. 40 to 100 bottles a minute. Hood and tank of heavy galvanized iron. Patented central water-distributing valve guaranteed never to leak. Motor, ¼ H.P. Other types of Rinsers shown in our special booklet.

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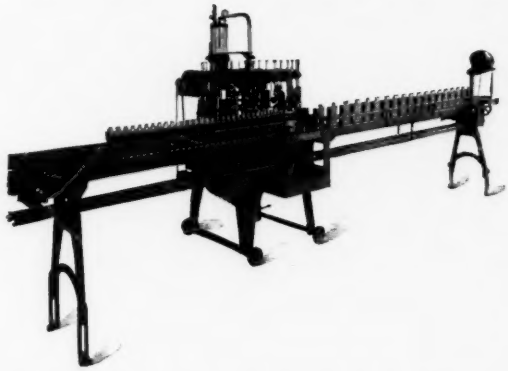
We make over twenty types and sizes of vacuum and pressure filling machines—automatic, semi-automatic and hand-operated; for practically all kinds of liquids and containers; for any production desired. Catalogs giving full information furnished on request.

AUTOMATIC ROTARY VACUUM FILLING MACHINE AND DISCHARGE CONVEYOR:



For filling light and heavy liquids of all kinds, such as medicines, tonics, emulsions, extracts, catsup, vinegar, syrups, etc.

Capacity: 40 to 140 bottles a minute. Clean, accurate filling without waste. Bad bottles automatically detected and skipped.

Made in four sizes: 8-tube; 12-tube; 18-tube; 24-tube.

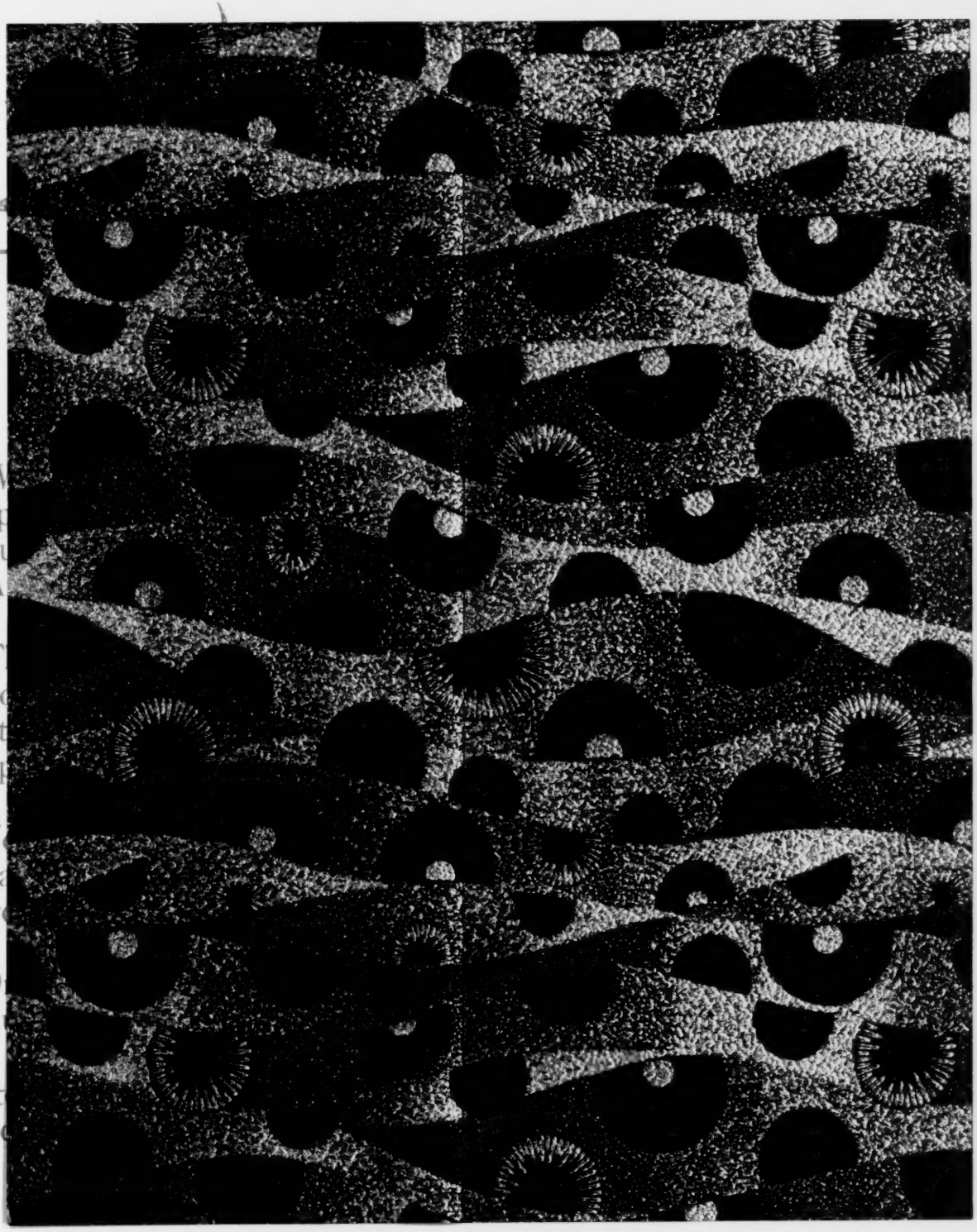
BELT CONVEYORS AND PACKAGING TABLES:

Belt conveyors of any length with belts 4″, 6″, 7″, 8″, 10″, 12″, 18″, 24″ wide. Conveyors with belts 10″ or wider, are furnished with working tables if desired. Cooling belts for products filled hot.

FILTERS:

For clarifying medicines, extracts, syrups, vinegar, perfumes, fruit juices, oils and similar products. Fourteen types and sizes of filtermasse filters, paper sheet filters, cloth filters. Our catalog gives full details.

Special rotary and centrifugal pumps for use with filters, and for other purposes.



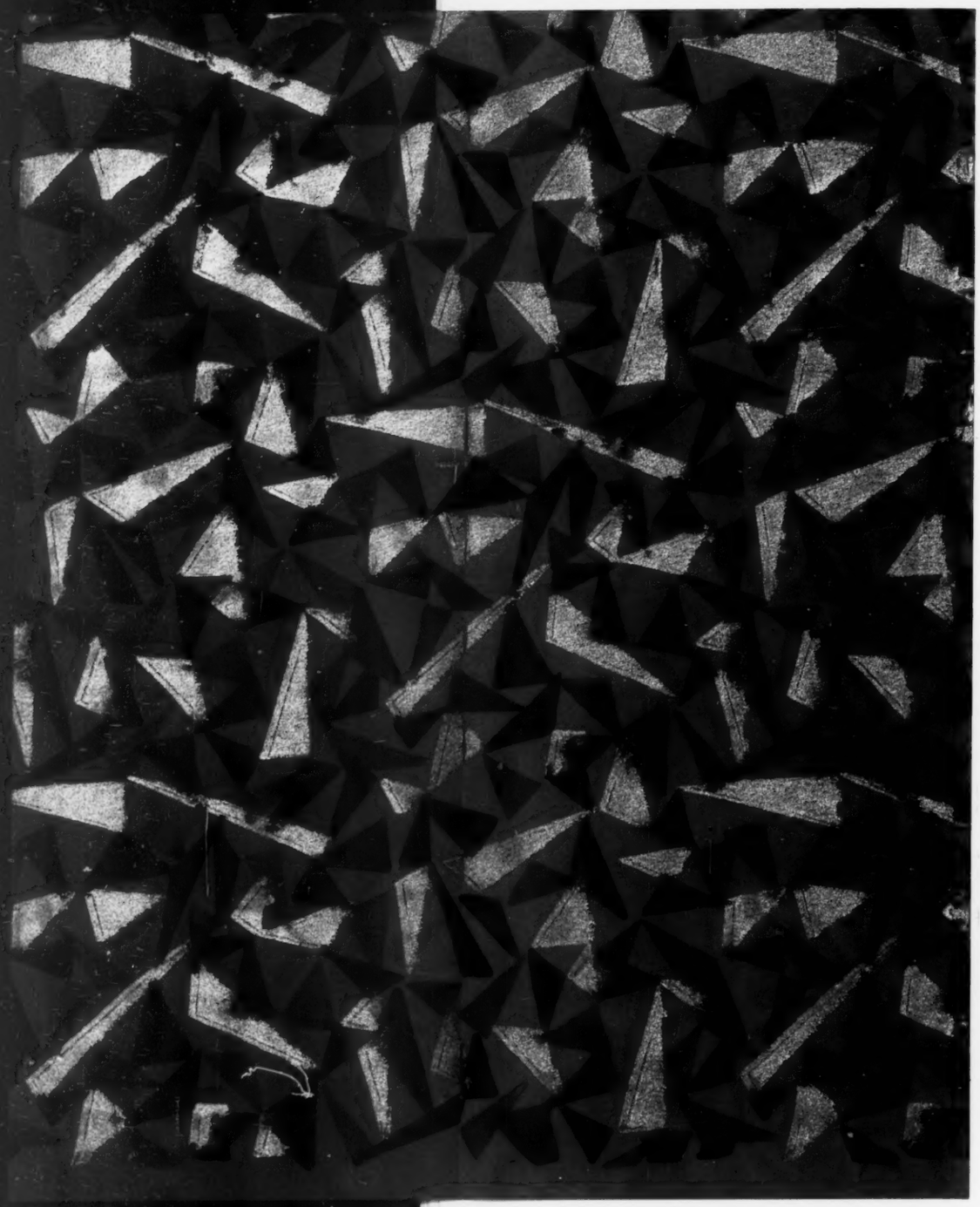
Swatch books and working sheets on application.

MATTHIAS & FREEMAN PAPER CO.

Manufacturers *Distributors*

BOX COVER PAPERS

143 N. FIFTH ST. PHILADELPHIA, PA.



American-Made Papers

The Sunrise Line is representative of the best of American Produced Papers.

New designs, pleasing color combinations and capable workmanship permit a wide and varied use in helping you to produce packages with modern sales appearance, that will create consumer preference for your products.

By all means write us for complete swatch books so that you may have the advantages of these new papers to meet your ever-growing competition.

Specify Sunrise Papers.
Stocked at Philadelphia.
Same day shipments.

Swatch books and working sheets on application.

MATTHIAS & FREEMAN PAPER CO.

Manufacturers *Distributors*

BOX COVER PAPERS

143 N. FIFTH ST. PHILADELPHIA, PA.

McDONALD ENGINEERING CORP.

220 VARET STREET, BROOKLYN, N. Y.

LONDON: WINDSOR HOUSE **VICTORIA STREET S.W.I.**

Products

Automatic Straight-Line Labelers and Corkers

Single
Double
The "Korker"
Single Duplex
Double Duplex
The "Spotter"

LABELING MACHINES:

All McDonald Labelers are of the straight-away (not rotary) for straight line production units and adapted to oval, round, square and triangular bottles; also boxes, cartons, cans, spools, soap and many kinds of rectangular packages.

There are six models covering every possible labeling contingency:

SINGLE AND DOUBLE LABELERS:

The Single Labeler labels any of listed packages with one spot labels on one or three sides.

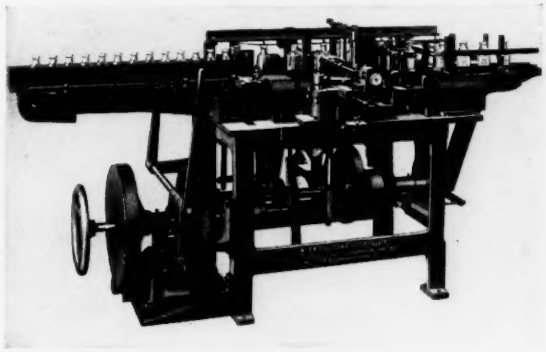
The Double Labeler applies front and back labels on opposite sides of the package or on four sides.

THE SINGLE DUPLEX:

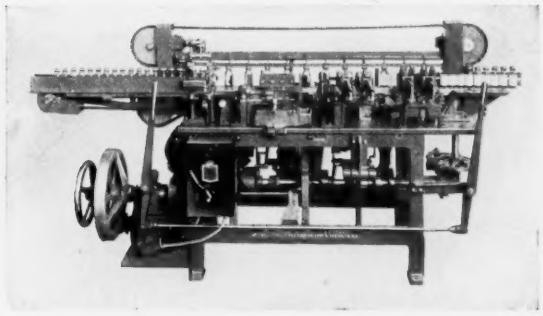
This new development handles one spot label on two packages simultaneously, keeping machine speed at 60 per minute and labeling speed at 120 per minute.

THE DOUBLE DUPLEX:

The Double Duplex places four labels on two packages simultaneously.



Double Labeler



Duplex Labeler

THE ALL-AROUND LABELER:

The All-Around Labeler places one label around square or round bottles and packages where entire label is gummed instead of only lapped ends.

The speed or output depends upon size of packages and labels and varies from 40 to 120 packages per minute or 40 to 240 labels per minute.

The Duplex Labelers double the output from the Single and Double Labelers at no increase of machine speed. They eliminate *another* one operator and save space.

All models adjustable within certain limits within ten minutes.

THE "SPOTTER":

Places label accurately on round bottles in reference to the raised lettering on bottles automatically—see Listerine bottles.

The distinctive features of all McDonald Labelers are accessibility, simplicity, speed, clean application and accurate registration because the label is *not* slipped from a gummed surface to the package.

BOTTLE CORKER:

Known as the "Korker," automatically drives tapered or straight corks as the bottles are conveyed through machine.

The corks are fed from overhead hopper and tapered corks are rectified so that small end is always down.

Machine stops automatically when an imperfect cork appears and never delivers one to be driven unless bottle is in position to receive it. The "Korker" is also straight-line feed and is adjustable for various size bottles; speed, 40 to 90 perfectly corked bottles per minute.

"NATIONAL"

PACKAGING MACHINERY

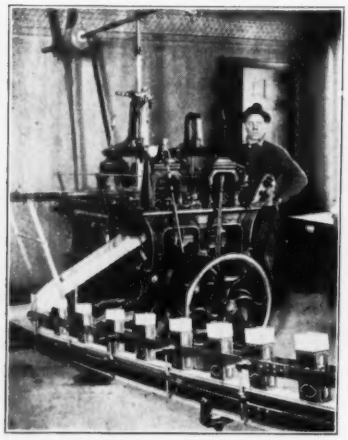
feeds. forms & dates. lines. weighs & fills. seals. wraps & hermetically seals cartons

Fills Bags; Packs Cans; Forms Paper Boxes, Tapered Pails, Display Containers, etc.

Name and Type of Machine	Ask for Leaflet No.	Package Limits Minimum	Package Limits Maximum	Rated Speed per Minute	Motor (H.P.) Required	Operator Required
"Improved Brightwood" Paper Box Forming Machine	1	¾ x 1 x 1½	5¾ x 9½ x 16 (A)	20 to 60	1	1 (C)
Carton Forming Machine	1	½ x 1½ x 1	(B) x 14 x 6¾	25 to 35	1	1 (C)
"Scott" Net Weighing Machine Gravity Type	2	None	None	20 to 30	None	1
Semi-automatic Power Type	2	None	None	15 to 35	⅛	1
Full Automatic Power Type	2	¾ x 1½ x 2	3½ x 6 x (D)	25 to 35	⅛ & ½	None
"Improved Bond" Gross Weighing Machine (F)		**"ADAPTABILITY" IS OUR KEYNOTE**				
Model MG	5	¾ x 1 x 1	5 x 5 x 14	10 to 30	½	1
Model MH	5	¾ x 1 x 1	5 x 5 x 14	10 to 50	¾	1 (G)
Model MJ	5	¾ x 1 x 1	3⅞ x 5 x 10	25 to 35	¾	None
Model MK	5	¾ x 1 x 1	3⅞ x 5 x 10	50 to 70	1	None
Model ML	5	¾ x 1 x 1	3⅞ x 5 x 10	25 to 35	1	None
Model MN	5	¾ x 1 x 1	3⅞ x 5 x 10	50 to 100	1 to 1½	None
"Improved Johnson" Bottom Sealing Machine	3	¾ x 1¼ x 2⅜	3¾ x 6 x 9	20 to 40	2	1
Top Sealing Machine	3	¾ x 1⅞ x 3	3 x 5 x 8	30 & 60	1	None
Combined Sealing Machine	3	¾ x 1⅞ x 3	3¾ x 6 x 9	20 to 40	2	1
Lining Machine	3	1 x 2 x 3	3 x 5 x 7	25 to 35	1	None
Wax Wrapping Machine	6	½ x 1 x 2	4 x 6¾ x 11½ (E)	30 & 60	1	None

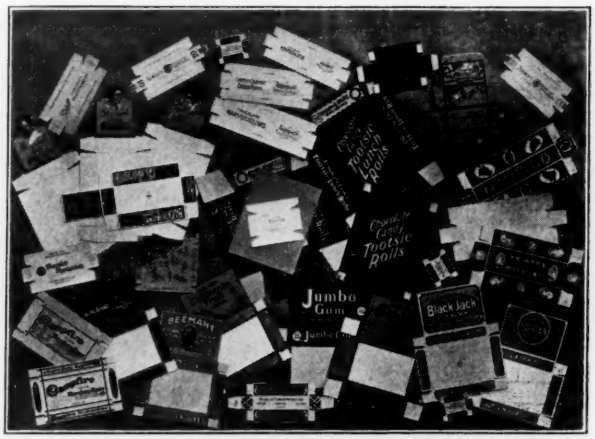
References: (A) No two in same box. (B) Conditional. (C) Part time only. (D) No limit. (E) Two models included. (F) Capacities ½ ounce to 5 pounds. (G) Two operators optional.

Special Limits, smaller or larger than those stated, can usually be arranged for when required.
Operation is seldom satisfactory when a minimum and a maximum size of package are handled on one machine.
Proportions are rarely practical when a minimum and a maximum dimension are combined in the same package.



"Brightwood" Carton Former

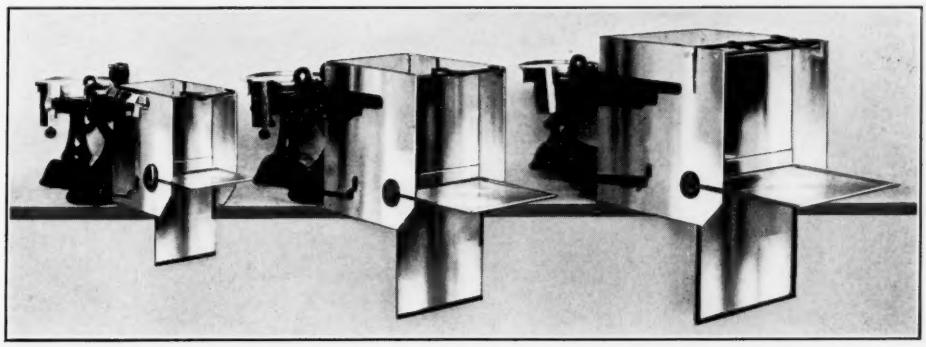
The *"Brightwood"* box, carton and pail former has an unfailing automatic feed built right into it, which takes up no additional floor space and costs nothing extra.



Typical "Brightwood" three-process box blanks

The "SCOTT" Line of Net Weighers

Equipped with a gravity-controlled friction compensating device



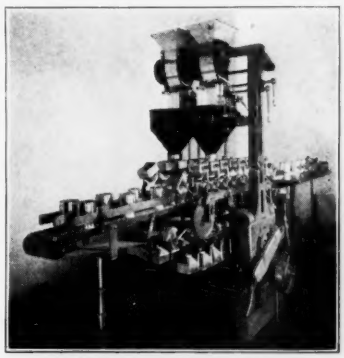
The simplest and most accurate weighing principle known—a single-lever, even-balanced, agate-bearing scale

No power required on free flowing materials

Built in 3 models—capacities ¾ to 8 oz., ¼ to 3 lbs., 1 to 5 lbs. The size of the "Scott" used is determined by the range of weights to be handled.

The price of the gravity "Scott" has never been changed. Many of these weighers have given continuous service for twenty years.

Any "Scott" may be embodied in our standardized 30- and 60-per-minute package handling and settling units. These are of both rotary and straight line type, arranged with many optional conveyor directions.



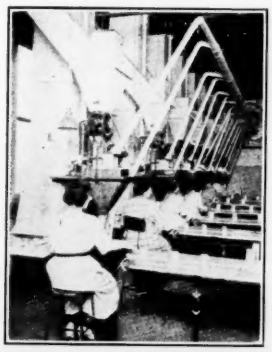
60-per-minute full automatic on "La Touraine" Coffee

Three types of power agitator, interchangeable with the gravity feeding attachment, are here shown:

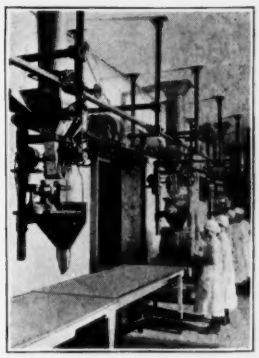
Type FE measures the bulk of the load and dribbles the finishing stream, thus increasing production without sacrificing accuracy.

Type FH preserves fragile materials, such as small crackers, in unbroken condition, and will not separate mixtures, such as whole pickling spice.

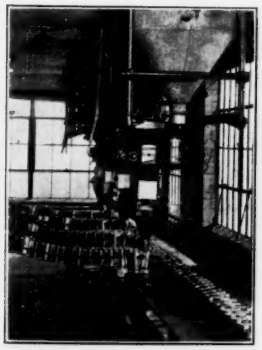
Type FJ forces sticky powders, such as pulverized coffee, in a fine, steady stream—without which accurate weighing is impossible.



Model A with FJ feeder handling "Forbes'" Spices

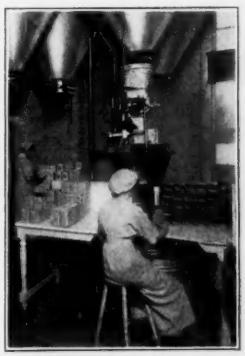


Model C with FE feeder weighing "Skinner's" Macaroni



Model C with FE feeder on "Maxwell House" Coffee

Any of these semi-automatic power weighers may be mounted portably to serve a series of storage and supply hoppers, grouped in a straight line or radially about a common center, if preferred.



Model A with FH feeder handling "Berdan's" Teas

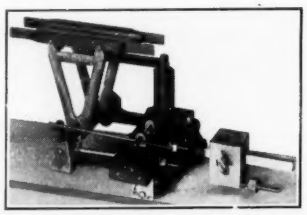
(Continued on Next Page)

XUM

The "IMPROVED BOND" Line of Gross Weighers

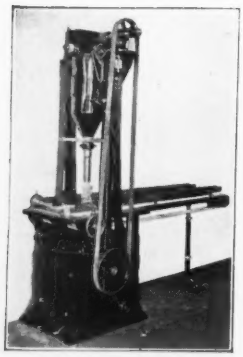
Equipped with special deaerating auger feeders for powdered materials. These make operation practically dustless, insure sanitary working conditions and reduce waste to a minimum.

It is simple and light



The snappy four-pivot, agate-bearing scale which electrically controls all weighing stations

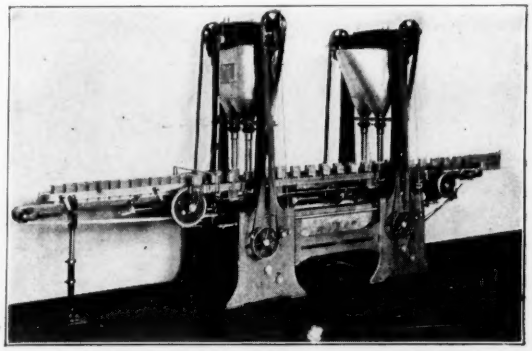
It is accurate and durable



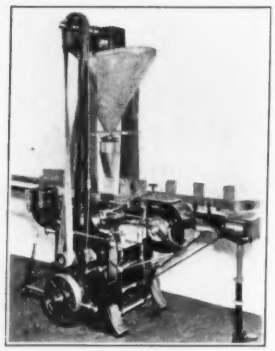
Model MG semi-automatic

MG may be optionally equipped (a) as a weigher, for special accuracy; (b) as a packer, for snug containers or those having reduced filling openings; (c) as a volume filler, for speed. Gravity gates supplied for free-flowing products.

MN is interchangeable to five distinct types of mechanical agitator for product, combined with shaker and/or press for package. Each side may be operated independently.



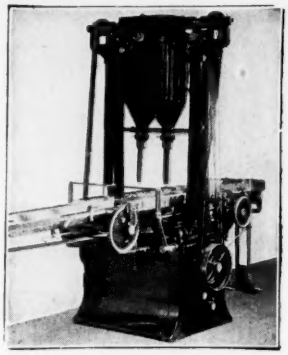
Model MN twin tandem automatic



Model MJ fully automatic

MJ eliminates the operator required on model MG and may be automatically connected with package forming, lining, sealing and wrapping units.

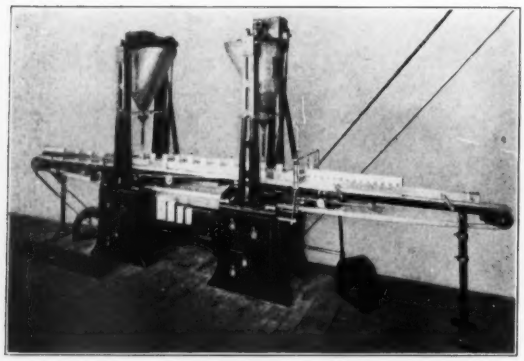
MK is most valuable where high production rather than accuracy is desired. It has a record of 61 to 65 packages per minute over a period of 2½ years.



Model MK twin automatic

ML, like model MN, fills the bulk load quickly at the first station and check-weighs, under the influence of a fine dribble stream, at the second station. It also starts and stops automatically with the supply of packages.

MH, with an operator to handle each package twice, is popularly used to duplicate the work of model ML. It is slower but far more flexible, as it may also be equipped as a twin weigher, packer or filler. In such case the operator handles two packages simultaneously.

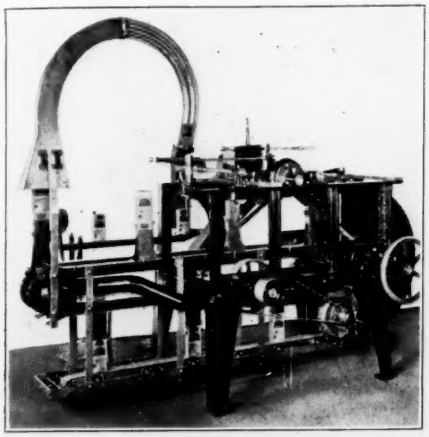


Model ML tandem automatic

Model MH twin semi-automatic

The "IMPROVED JOHNSON" Line of Carton Sealers

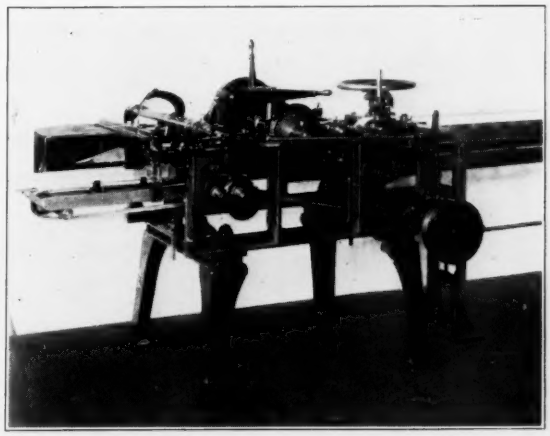
Liners for grease-proofing and Wrappers for moisture-proofing



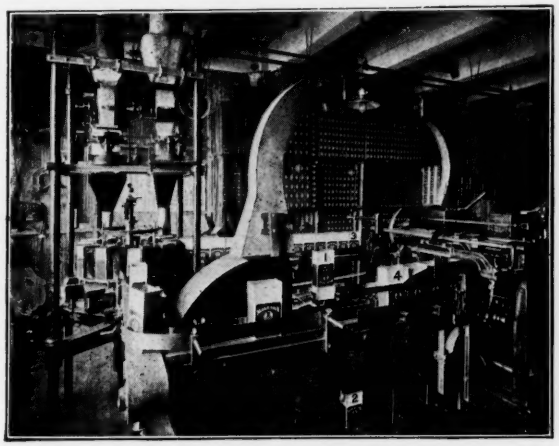
Bottom Sealing Machine

Bottom Sealer — Sets up standard knock - down or "glue-end" cartons ready for the lining or filling process.

Top Sealer — Seals filled cartons sift-tight. If they each contain a lining its top is interfolded with the carton flaps.



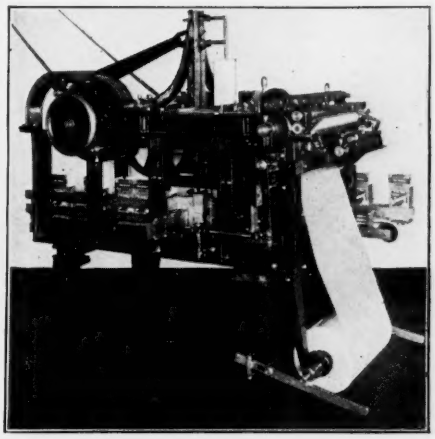
Top Sealing Machine



Combined Bottom and Top Sealer

Combined Sealer — has separate bottom and top sealer built side by side in one frame, thus saving floor space and first cost. Is quickly adjustable to many sizes.

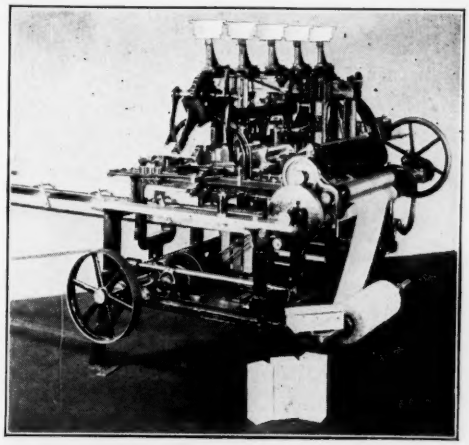
Liner — makes and inserts a glued bag of glassine, parchment or plain paper.



Lining-bag Maker and Inserter

Wrapper—hermetically (heat) seals a transparent sulphite or waxed glassine paper, forming the longitudinal seam on side or bottom of package as preferred.

All our machines are adjustable (see package limits) and may be automatically connected in series in many optional floor-plan arrangements. Installation is made at our expense east of the Rocky Mountains.



Wax Wrapping Machine

The cost of our recommendations is a sample of your package and product.

An estimate of your production needs will help us to quote price and delivery date.

(*See three preceding pages*)

NATIONAL PACKAGING MACHINERY COMPANY

Manufacturers

473 WATERTOWN STREET, NEWTONVILLE, BOSTON, MASS.

PACKAGE MACHINERY COMPANY

Over 150 Million Packages per day are wrapped on our Machines

General Offices: Springfield, Massachusetts

New York: 30 Church Street **Chicago: 111 West Washington Street**

London: Baker-Perkins, Ltd., Hythe Road, N.W. 10

Manufacturers of Package Wrapping Machines

We make machines for wrapping a wide variety of products—soap, crackers, confectionery, toilet articles, cakes, frankfurters, yeast cakes, etc. Also machines for bundling packages—described on the opposite page.

With our large line of machines available, it is seldom necessary to go to the expense of designing a new machine to wrap a given product. For example, the machine which wraps skinless frankfurters in Cellophane is an adaptation of the machine which wraps stick candy; the machine which wraps hotel soap is an adaptation of the machine which wraps razor blade cartons in glassine.

Advantages Over Hand Wrapping

Where our machines replace hand wrapping, they pay for themselves in from six to ten months, when used to capacity. Even in cases where a machine is used to only one-third of its capacity, it makes a saving over hand wrapping.

Machine wrapping also improves the appearance of the package. The wrapping is uniformly neat, folds and sealing are perfect and tight. The registration is absolute—the panels of the wrapper are accurately placed on the package.

The Greater Economies of Modern Machines

Great as are the economies of machine wrapping over hand wrapping, still greater savings are being made by improvements which we have embodied in our present line of machines. These newer models operate at increased speed. This means greater production per square foot of floor space. Greater speed also means more production per operator—lower labor costs. In many cases, our machines require fewer operators than are required by other types of machines.

Improvements in the design of our machines have also made large savings in the amount of material formerly required by other machines—there is less overlap on the wrappers, for example.

We have also improved upon the work done by wrapping machines. Due to exclusive features, our machines produce a much neater, smoother-looking package. In the case of a high-class product such as fine toilet soap, for example, this perfection in wrapping is extremely desirable.

Improving Packages — Lowering Costs

Our wide experience, gained in working with package goods manufacturers for the past twenty-six years, enables us to be of real assistance in devising attractive and economical forms of wrapping. If you wish to improve the appearance of your present package, if you wish to give the product greater protection, or to lower your costs, it will pay you to consult us.

Introducing a New Product

If you are about to introduce a new product, consult us in the early stages. Early consultation enables us to suggest important economies in wrapping material and methods that might be more difficult to effect later. For example, the size and shape of a product have a great deal to do with the cost of wrapping.

Permanency of Service

The stability of the organization of the Package Machinery Company, together with its ample capital,

PACKAGE MACHINERY COMPANY

Over 150 Million Packages per day are wrapped on our Machines

ensures permanency of service. We are the largest and one of the oldest makers of wrapping machines in America.

Our machines are of simple design with the fewest possible working parts and are built for service. Each machine is tested before it leaves the factory and is, of course, guaranteed to operate as described. Some of our machines still in use were built over twenty years ago.

Write for Catalogue

We suggest that you write to our nearest office for catalogue. If you have any special problem, send us a sample of the product which you wish to have wrapped, with a description of the type of wrapping you have in mind. We will be glad to assist you.

MACHINE BUNDLING

Makes Large Savings in Packing Costs

Large savings are made by bundling packages in tough paper instead of packing in expensive cardboard containers. Numbers of important manufacturers adopted machine bundling almost as soon as they learned about it—The National Biscuit Company, Bristol-Myers (Ipana Tooth Paste), American Tobacco Company, Norwich Pharmacal Company (Unguentine), Diamond Match Company, Royal Baking Powder Company are all users of our machines.

Machine bundling eliminates the expensive cardboard container; this immediately produces a saving of 60 per cent on material. Each machine also saves from $2,000 to $5,000 a year in labor. And the paper wrapper being much lighter than cardboard makes a saving in transportation. Where the buyer pays the freight charges, this becomes a selling advantage.

A certified survey made in the plant of the Norwich Pharmacal Company by the A. C. Neilsen Company, Engineers, showed that the introduction of a bundling machine made an immediate saving of 65 per cent on packing material costs. Although at the time the survey was made the machine was working at only one-tenth of its capacity, the savings over former methods of packing amounted to $4,908 a year. You can realize what savings this machine makes when operating at full capacity. A similar certified survey made in the plant of the Bristol-Myers Company (Ipana Tooth Paste) showed such impressive savings that this company immediately ordered three more machines.

The cartons can be fed to the bundling machine automatically from a cartoning machine. Working at full capacity, one bundling machine will take care of the output of at least two cartoning machines. The machine bundles a dozen cartons in three tiers of four packages each; in two rows of six each or in one row of twelve each. It will also bundle six packages. See illustrations at right.

Machine bundling is suitable for tooth paste, shaving cream, gelatine, crackers, tobacco, cigarettes, toilet goods, matches and many other products of large volume production. In fact, for packing such articles in small lots, containers are a waste because in most cases these units are again packed in shipping cases.

The experience of large users shows that the bundle wrapped in tough paper and thoroughly sealed stands up as well in shipment as does the average cardboard container.

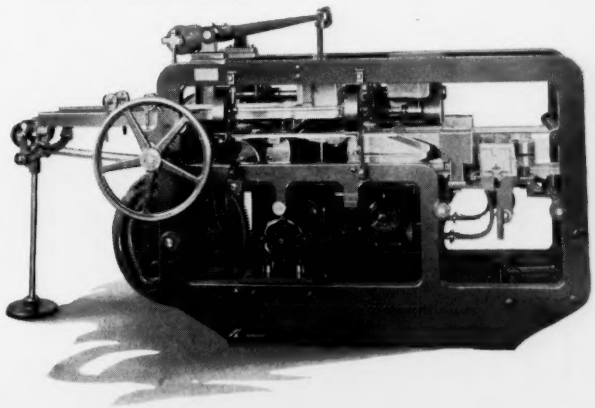
Either plain or printed wrappers can be used, the machine registering the panels perfectly. It also attaches printed end-seals.

Merchandising Advantages of Machine Bundling

Machine bundling makes it possible to economically fill the demand of retailers for small lots of one-dozen or half-dozen packages. Particularly desirable for chain store units.

Look Into These Savings

Find out how much machine bundling will save on your packing costs. Send us a dozen of your packages and we will return them to you showing how our machine would bundle them. We will also give you cost figures to compare with your present costs. Get in touch with our nearest office.



USERS of Paterson *Genuine* Vegetable Parchment enjoy an *extra* sales appeal for their product. It gives them an opportunity to capitalize the new-day popularity of *genuine* vegetable parchment which is spreading from home to home.

Paterson *Genuine* Vegetable Parchment forms an ideal protective covering for all moist products—insoluble, odorless, tasteless and grease proof. *Send for samples and quotations.*

The Paterson Parchment Paper Company

Original Makers of Genuine Vegetable Parchment

Chicago PASSAIC, NEW JERSEY San Francisco

PINCO PAPERS

Your packages when covered with PINCO PAPERS demand attention. These original creations with their harmonious colors, bright patterns and distinctive designs delight the eye and enhance the sales appeal of the package or container.

Among the wide range of colors, designs and textures in PINCO PAPERS, there is one that will meet with your conception of the ideal dress for your package or container.

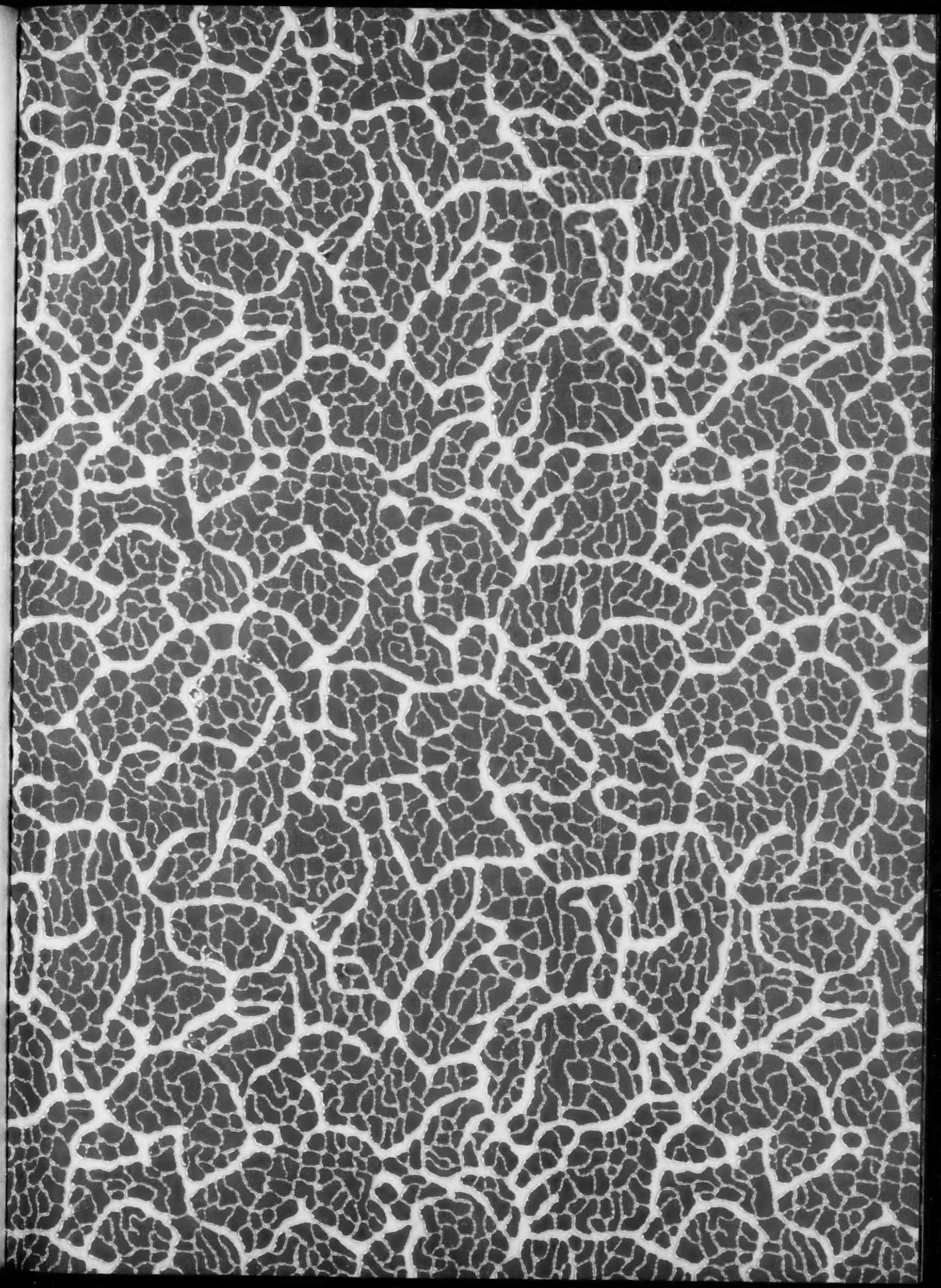
PINCO PAPERS

INCORPORATED

NINTH, BAILEY AND ERIE STS.
CAMDEN, New Jersey

NEW YORK OFFICE
[illegible]

CHICAGO OFFICE
1366 Conway Bldg.



XUM

XUM

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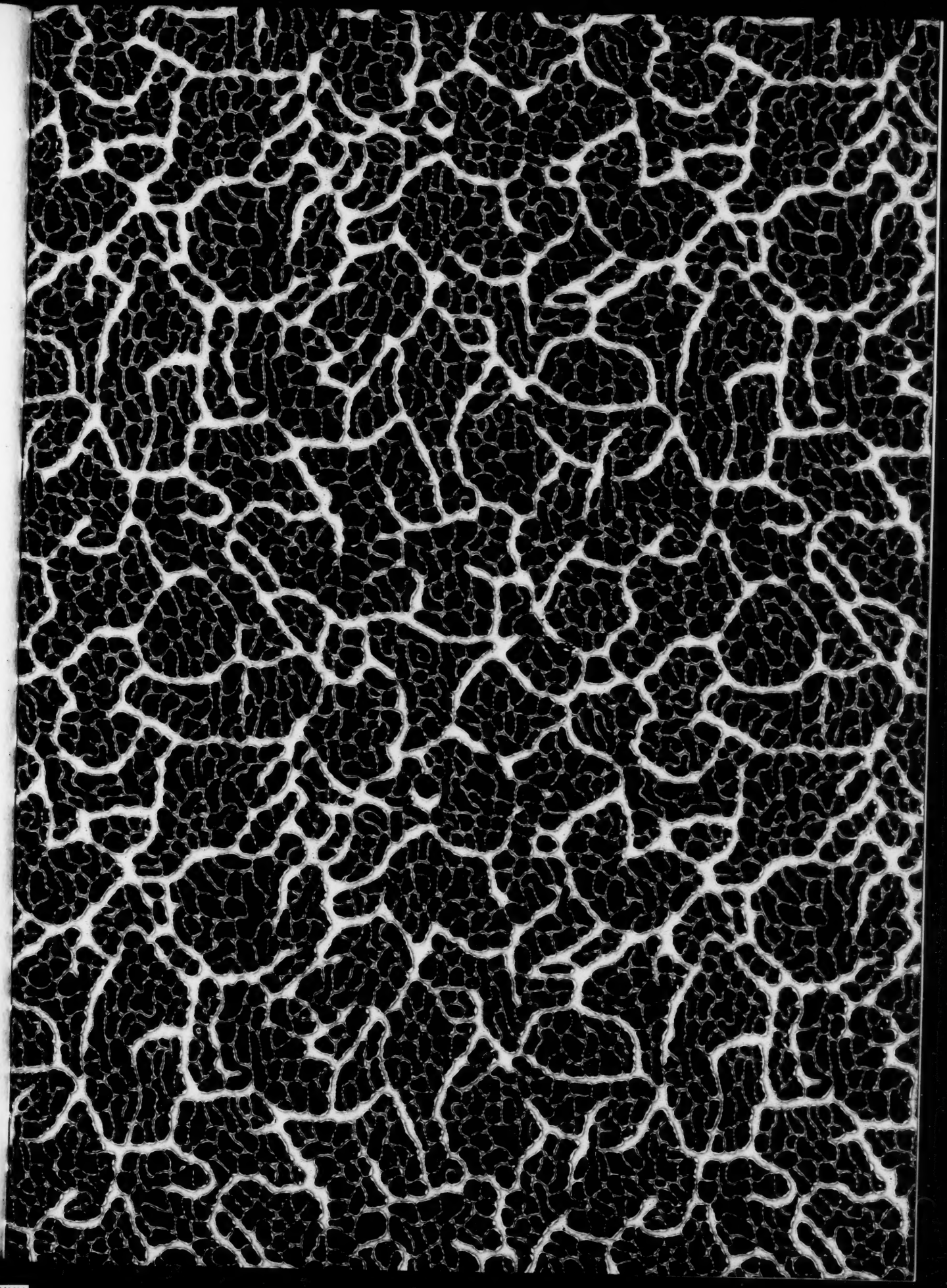

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Sample books and working samples of these papers and other papers in the PINCO line may be had for the asking, gratis. When in need of special designs for your exclusive use do not hesitate to call on PINCO.

Specify Pinco!

It Covers Everything.

NEW YORK OFFICE
Room 710—225 Fifth Ave.

PINCO PAPERS
INCORPORATED
NINTH, BAILEY AND ERIE STS.
CAMDEN, New Jersey

CHICAGO OFFICE
1506 Conway Bldg.

PETERS MACHINERY COMPANY

GENERAL OFFICE AND FACTORY 4700 RAVENSWOOD AVE

CHICAGO.U.S.A

PRODUCTS:

Package Forming and Lining Machines, Package Folding and Closing Machines, Package Wrapping and Labeling Machines and other special automatic equipment for peculiar Packaging Problems.

PETERS PACKAGE FORMING AND LINING MACHINE

The Forming and Lining Machine takes the carton blank and a superimposed sheet of paraffine, parchment or other protective paper suitable for the goods to be packed and simultaneously forms them into an open receptacle, interfolding the lining with the flaps so that they become an integral part of each other and locks the tucking flaps into place. This forms a smoothly lined receptacle without any projecting edges or folds so that the contents may be readily inserted and without any disarrangement of the protective lining. Further, the

Peters Package Forming and Lining Machine

lining, by reason of the peculiar interfolding, is so interlocked with the flaps of the carton that it can be withdrawn from the carton. There is no paste, glue, or other adhesive used in the assembling of this receptacle.

The machine is equipped with three-step cone pulley for belt drive or direct drive equipment, including motor. The speed of the machine may be varied to meet the requirements of the filling or packing operations, and a conveyor drive pulley is made an integral part so that the cartons can be conveyed by canvas belt to any desired location.

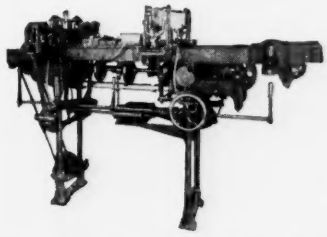
This machine will replace from five to seven hand operators and effects an annual saving of about $3,500.00.

Forms and lines 40 packages per minute. Requires but one operator. Weight, 1,000 pounds; floor space, 4′ x 4′. One-quarter horsepower to drive.

PETERS PACKAGE FOLDING AND CLOSING MACHINE

The package, after being filled either by hand or where the nature of the goods warrants, by a filling machine, is now ready to be folded and closed on this machine. Our automatic filling machine is not shown on this page, due to the variety of construction depending on the different articles to be packed. The folding machine takes the filled but unclosed package and automatically folds the up-standing portions of the lining and carton so that the goods are completely enveloped by the lining, then closes down the cover and inserts the front flap, making a rigid and firm package.

The machine is entirely automatic and does not require an operator, but we have found it desirable that the inspector be stationed at this machine to see that the



Peters Package Folding and Closing Machine

packages are properly and neatly filled. The inspector does not need to touch the machine, however.

If desired, an attachment can be furnished to place an advertising slip or other printed matter into the package before the cover is closed down.

Where no outside wrapper is required and the carton itself is printed or lithographed, a Sealing Attachment can be furnished to place a seal of any desired size across the edge of the package so that it cannot be opened without destroying such seal.

We also build a duplex folding and closing machine having double the capacity of the single. The single machine replaces from five to seven hand operators and effects an annual saving of about $3,500.00.

Folds and closes 40 packages per minute. One operator (optional). Weight, 1,000 pounds. Floor space required, 2′ x 6′. One-quarter horsepower to drive.

XUM

B. F. PERKINS & SON, Inc.

HOLYOKE, MASS., U. S. A.

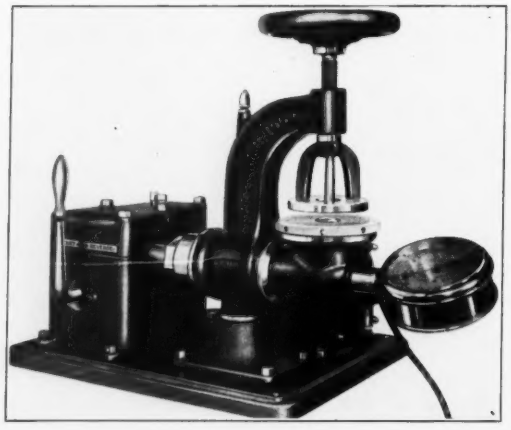
Manufacturers of

Testing Instruments

Calendar Rolls

Paper Mill and Textile Machinery

The JUMBO Wheel Clamp Motor Driven MULLEN TESTER

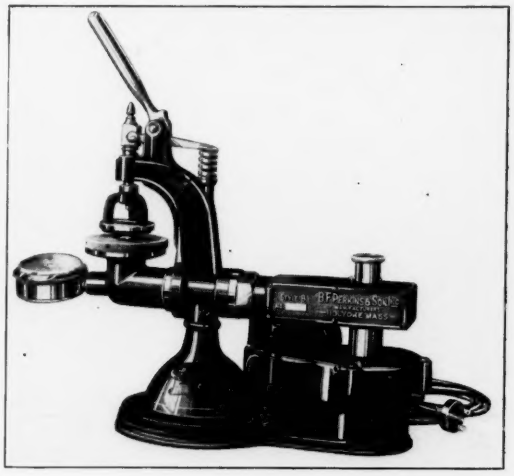


For Testing Material Up to 1000 pounds.

The Jumbo Wheel Clamp Motor Driven Mullen Tester is a powerful adaption of standard Mullen Tester and is designed especially for testing heavier material, such as corrugated, fibre and box boards, wrapping paper, textiles, hosiery, knit goods and other material up to 1,000 pound pressure per square inch. This machine also illuminates the human element from every test, all tests being made under precisely the same conditions.

The Lever Clamp Motor Driven Mullen Tester is absolutely accurate, uniform and positive for determining the exact bursting strength of any material up to 300 pounds pressure per square inch. This machine illuminates entirely the human element from every test because the operation is under absolute control, and all tests must necessarily be made under precisely the same conditions.

The Lever Clamp Motor Driven MULLEN TESTER Model B



For Testing Material Up to 300 pounds

The Mullen Tester indicates actual bursting strength irrespective of any other factor. It operates on the hydraulic principle, the material to be tested being clamped over one end of a cylinder containing liquid which is compressed by the action of the motor. The encased fluid is thus forced to exert pressure on the material which is protected from becoming wet by a rubber diaphragm. At the same time the fluid acts directly on a standard pressure gauge which records the bursting strength in actual pounds per square inch, the standard for measurement recognized the world over.

At the bursting point the indicator on the gauge remains stationary, giving a positive record of the exact result of the test. (The indicator remains at this point until being released to zero by a control button.)

The Mullen Tester is established as the only correct basis for testing paper, textiles and other materials for actual use, because it determines the exact bursting point. The operation of this apparatus distributes pressure uniformly over the entire area under test and thus feels out the very weakest spot of the stock. It bursts the fibres at the very point of weakness regardless of whether the strain be with the grain in paper or the warp in fabrics, just as a sufficient strain would do in actual use; therefore, the slightest imperfection determines the result of the test.

The Mullen Motor-Driven Tester is quick in action and easily operated. Its consistency of operation has won for it the hearty endorsement of manufacturers, dealers and users of paper goods, textiles and similar materials everywhere, and has caused such highly exacting institutions as the United States Government to adopt it for use.

Hand operating testing instruments that work to such a fine degree of accuracy as the Mullen Tester, are sensitive to the varying action of different operators. To overcome this variation and at the same time being a machine for faster work, we have perfected the above Motor Driven Mullen Testers which make tests of perfect uniformity, whether operator be the most inexperienced or seasoned operator.

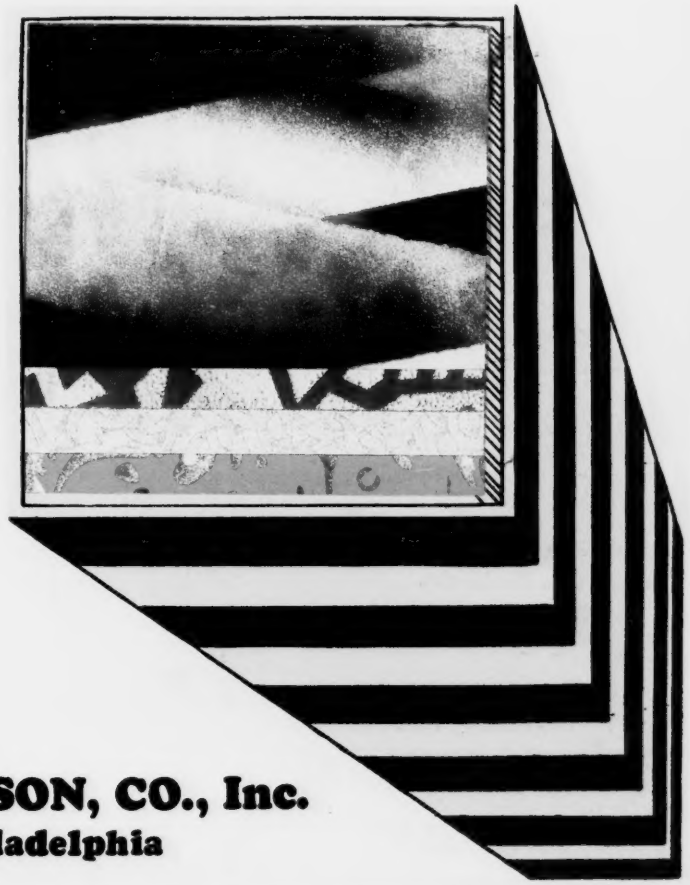
We rebuild both the Hand Driven Lever Clamp or Jumbo type of Mullen Tester into Motor Driven machines at a moderate charge and further details in regards to rebuilding these machines will be gladly sent on request.

XUM

WHITING-PATTERSON PAPERS

are known and sold from coast to coast. From no other source may you obtain such variety of gorgeous colorings and designs. The line is complete—Frictions & Flints—Mottles—Golds Silvers and Aluminums, either plain or embossed—embossed Micas—imitation Wood Veneer and Leather—and the best of modern creations from both domestic and foreign mills

¶ Our imported "Modernistic" line of papers represent the finest expression of modern motifs in artistic adaptation. Swatch books of any line or sample sheets are yours, gratis, on request. Write your nearest distributor.



WHITING-PATTERSON, CO., Inc.
New York & Philadelphia

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265 Canal Street

NEW YORK CITY

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Imported and Domestic Box Coverings

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Pneumatic Scale Corporation, Limited

General Office and Plant: Norfolk Downs, Mass.

BRANCH OFFICES

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26 Cortlandt Street

Chicago
360 North Michigan Avenue

San Francisco
320 Market Street

London, England

Australia, J. L. Lennard
Melbourne and Sydney

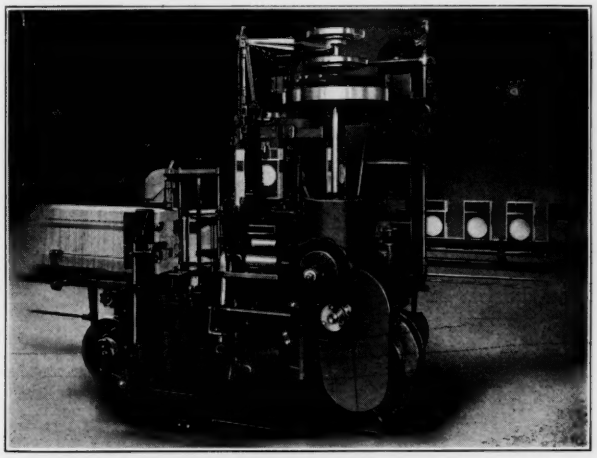
PRODUCTS

Cartoning Division

Carton Feeder	Lining Machines	Top Sealer	Capping Machines
Bottom Sealer	Weighing Machines	Wrapping Machines	Labeling Machines

Packaging Machinery

For forty years this company has specialized in the manufacture of automatic packaging, wrapping and weighing machinery for dry free-flowing materials. The line consists of seventy different machines designed for coordinated operation. Production speeds are 15, 30, 60, 90 and 120 per minute depending on the material handled. Complete equipment for packing, wrapping, weighing and labeling in cartons or cans is included in the cartoning line.



PNEUMATIC Automatic Carton Feeder and Bottom Sealer

The equipment of this company is in successful use for the packaging of most of the world's best known food and other products including those of Walter Baker & Co., Inc., American Cotton Oil Company, American Sugar Refining Company, Beechnut Packing Company, Black Flag Company, Joseph Burnett Company, California Raisin Growers, Colgate & Company, Corn Products Refining Company, Washburn-Crosby Company, Pillsbury Flour Mills, Quaker Oats Company, Atlantic & Pacific Tea Company, Tetley Tea Company, Cream of Wheat Company, Eastman Kodak Company, Gold Dust Corporation, Hershey Chocolate Company, H. J. Heinz Company, Kotex Mfg. Company, Kellogg Toasted Corn Flake Company, Lever Brothers, Michelin Tire Company, Oakite Products, Inc., Postum Cereal Company, Inc., Proctor & Gamble Company, Salada Tea Company, Swift & Company, and many others.

The experience of this organization qualifies us to undertake any packaging problem which may arise in your business.

For further information consult our nearest office.

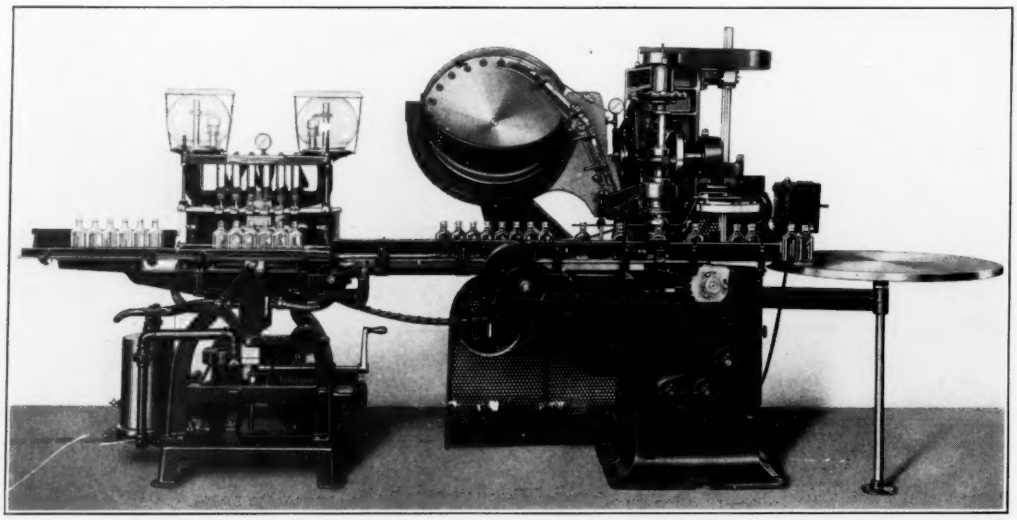
Pneumatic Scale Corporation, Limited

PRODUCTS

Standard Automatic Vacuum Filling and Capping Division

Under this division the Pneumatic Scale Corporation manufactures an extensive line of hand, semi-automatic and fully automatic vacuum filling, capping and corking machinery for liquids and semi-liquids. Forty years of experience and successful operation is behind the service of this divison.

Vacuum Filling Machines (For Liquids and Semi-Liquids)
Automatic Capping Machines Automatic Cap Feeding Machines
Automatic Corking Machines



Standard "Samco Jr." Vacuum Filling Machine with Single Head Capper and Automatic Cap Feeder.

FILLING MACHINES

The machines range from one to two filling heads on the small portable models; six to ten heads for the semi-automatic junior models, and ten to twenty heads on the fully automatic machines. Speeds range from 20 to 120 containers per minute.

Constructed on the straight line feeding principle, the machine lends itself to quick and easy adjustment from one size bottle to another. Multiple filling and straight line feeding makes for slow, easy movement of feeding, filling and delivering. This slow gang movement minimizes the chances for spilling or breakage.

CAPPING MACHINES

The range of capping machines covers single head cappers with a speed of 40 per minute to automatic six head cappers capable of 60 to 120 per minute.

Our Automatic Cap Feeding Machines used in connection with our Automatic Filling Machines permits the filling and capping to be accomplished in one continuous operation without employing a single hand operation in the process. All standard types of screw caps including single or continuous thread, Amerseal, or Duplex are handled with equal facility without danger of marring the most delicate finish.

This standard capping machine with automatic feed is not to be confused with ordinary cap tightening devices.

With our machine the entire process of feeding the caps, spotting them accurately on the container and then tightening to any desired tension is continuous and fully automatic. No operator is required.

The vacuum filling and capping equipment of this division is in use for Carter's Ink, Sanford's Ink, Mobiloil, Whittemore's Shoe Polish, Gulden's Mustard, Hellman's Mayonnaise, Whiz Products, Cico Paste, I-Car-De Mayonnaise, Lea & Perrins Sauce, Burnett's Extracts, Hinds Honey & Almond Cream, Vicks Vapor Rub, Mulsified Cocoanut Oil and many others of world wide reputation.

For complete information on filling and capping machinery, see our nearest office.

for

FOIL USERS

REYNOLDS METALS CO.
incorporated
LOUISVILLE, KY.

FOIL AND FOIL PRODUCTS

A MASTER METAL PRODUCT

A Mark of Quality

ALUMINUM FOILS

Manufactured in all yields from 2000 to 45,000 square inches per pound. Plain; embossed; printed; lacquered. With or without tissue interleaving. Mounted on dry or waxed papers. In sheets or rolls. Width up to 26 inches. Soft and pliable or annealed to any desired temper. Used for packing confections, chewing gum, tea, cocoanut, cheese, films, etc.

PURE TIN-FOILS

Manufactured in yields ranging from 2000 to 8000 square inches per pound. Lead-free foil can be supplied yielding 13,500 square inches per pound. The former grade may be plain; embossed; printed; lacquered. With or without tissue interleaving. Mounted on dry or waxed papers. In sheets or rolls. Used for packing cheese and confections.

COMPOSITION FOILS

Manufactured in yields ranging from 800 to 5000 square inches per pound. Plain; embossed; printed; or lacquered. With or without tissue interleaving. Mounted on dry or waxed papers. In sheets or rolls. Used for wrapping cigars, candy, chewing gum, cigarettes, etc.

LEAD FOILS

Manufactured in yields ranging from 600 to 1600 square inches per pound. Plain only. Can be tissue interleaved and the lighter grades mounted on dry or waxed papers. In sheets or rolls. Chiefly used for packing tea and similar bulk products.

Our Service Department will gladly analyze your packing problems and recommend the proper grade of foil or type of package. Recommendations and samples on request. No obligation.

MASTER METAL CARTONS

Lined or surfaced with silver or lacquered plain or embossed foil backed with substantial paper-board. Printed or unprinted. Combines advantages of paper and metal containers. Individual cartons and counter display boxes. For cakes, candies, cheese, cigars, cigarettes, ice cream, etc.

MASTER METAL TITE-WRAPS

The tite wrap consists of foil inseparably attached to paper by an odorless, water-proof cement. Affords metal package protection at paper-package cost. Applied by standard tite-wrapping machines. Can be printed in colors. In sheets or rolls. Used for packing cereals, prepared foods, dried fruits, raisins, cocoanut, candies, etc.

UNIFOIL BOX COVERS

A foil-surfaced paper-backed decorative box covering of rare beauty. Supplied in richly-embossed silver or colors. Easily handled by standard box-making machines. Special color-printed designs for Christmas. Offered in a wide range of embossings, colors, and fancy patterns in 20x26 inch sheets or 26-inch rolls.

METALKRAFT

A foil-lined wrapping paper, the foil being sandwiched between two sheets of kraft paper. Moisture-proof and grease-proof. Useful as a lining for export shipping cases or for packing any article likely to be injured by moisture, insects, etc. Sheets or rolls.

REYNOLDS METALS COMPANY

INCORPORATED

LOUISVILLE, KENTUCKY

110 BRIDGE ST., BROOKLYN 500 HOWARD ST., SAN FRANCISCO

SALES OFFICES IN PRINCIPAL CITIES OF U. S. A.

From cigars to bacon or from soup to nuts

IT makes little difference whether your product takes the shape of a bottle, a can, or a carton; it is an advantage to place it in a display container.

With a background of experience of more than 30 years in the display and folding box business, we can help you create a powerful display container; one that is simple to set up, that will attract attention, and help in selling your product.

Rochester Folding Box Co.

Lithographers

Rochester, New York

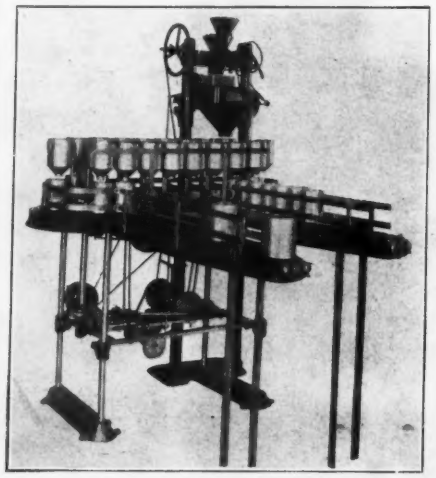
Eastern Sales Office—280 Madison Ave., New York, N. Y.

SCALE AND MACHINERY, INC.

Automatic Weighing and Packaging Machinery

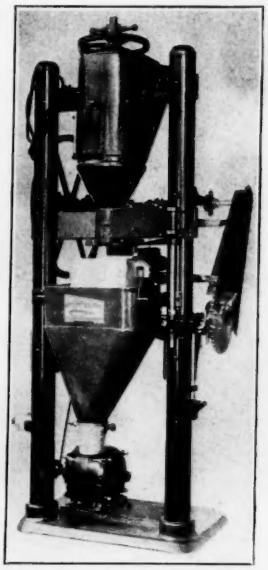
718 GREENWICH STREET, NEW YORK

Model NA or NPA (NA shown) Weigher and Filler. An application of either Model NA or NPA with fully automatic filling and settling device. Stops when no can is present without spoiling weights. Oiless bearings above product line. Alemite below. Floor space 5 ft. x 6 ft. Receives from or delivers to other machinery. Smooth action. Not intricate. Speed 30.

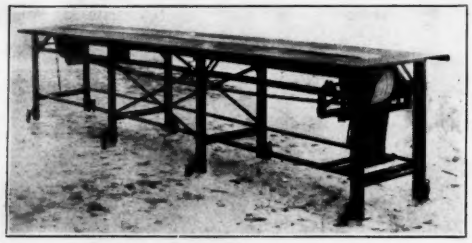


Model NA Weigher and Filler

Model NP weigher for non-free flowing material, as fine-ground coffee, bean coffee, pulverized coffee, tea (including pan and basket fired Japans), gelatine, jelly powders, soluble coffees, shell and elbow macaroni, and many other things. Base 13″ x 20″. Heighth 52″. Motor ¼ H.P., 110 volts. A simple attachment for this machine will convert it into a machine for free flowing products. Will operate in lines with other machinery, like carton sealers, can seamers or labeling machines. Oiless bearings throughout. Speed 30. Weighs ¼ ounce and up.



Model NP Automatic Weigher



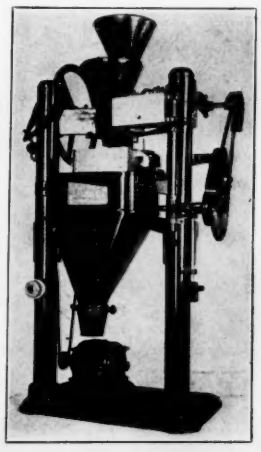
Conveyor Table

All metal conveyor or work table. Any length. Any width belt, cotton or rubber. Metal top. Curved edges. Easily cleaned. No splinters. Motor driven. Excellent for hand work on cartons, cans or bags.

Model GM Weigher

A sturdy, inexpensive weigher for the small production house. Weighs up to 5 lbs. Extremely accurate. Self testing. Handles only free flowing material. Base about 18″ x 24″. Hopper holds about 80 pounds of rice. Other material in proportion.

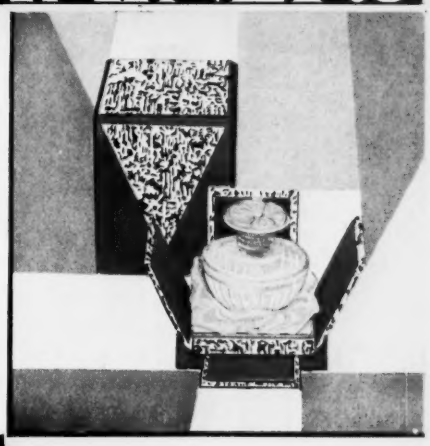
Model N Weigher. For free flowing material like rice, tapioca, farina, corn meal, barley, peas, steel-cut coffee, bean coffee, chocolate shreds, decorettes, etc. Base 13″ x 20″. Motor 1/12 H.P., 110 volts. Oiless bearings throughout. Height 40″. Speed 30.



Model N Weigher

MODERN CONTAINERS

Your merchandising problems can be solved by proper packaging. Ritchie boxes, for beauty and utility, are lighting the highways of business.



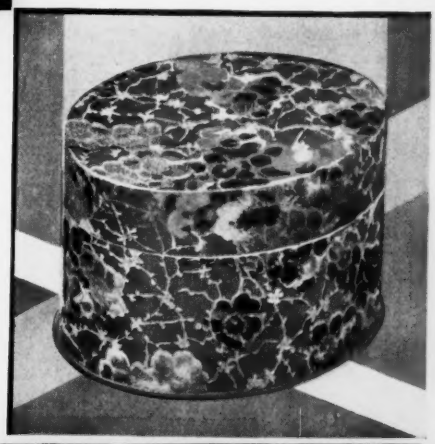
When launching a new product consult Ritchie —designers of containers of cleanliness, sleek appearance and fastidious appeal.

W C R & CO.

Automatic Machine production guarantees you a uniform box that never varies.

Boxes of precision, character and neatness.

From pharmaceuticals to fripperies, pencils to peanuts—Ritchie boxes are leading the "over the counter" sales procession.



W·C·RITCHIE & COMPANY

Can

All sizes, all shapes – metal top and bottom; fibre cap, fibre bottom – sifter, sprinkler or lift top – for any product – ready for your merchandising wrap or label or, if you prefer, printed in one, two or three colors – paraffined if you want it.

FIBRE DIVISION

W·C RITCHIE & COMPANY

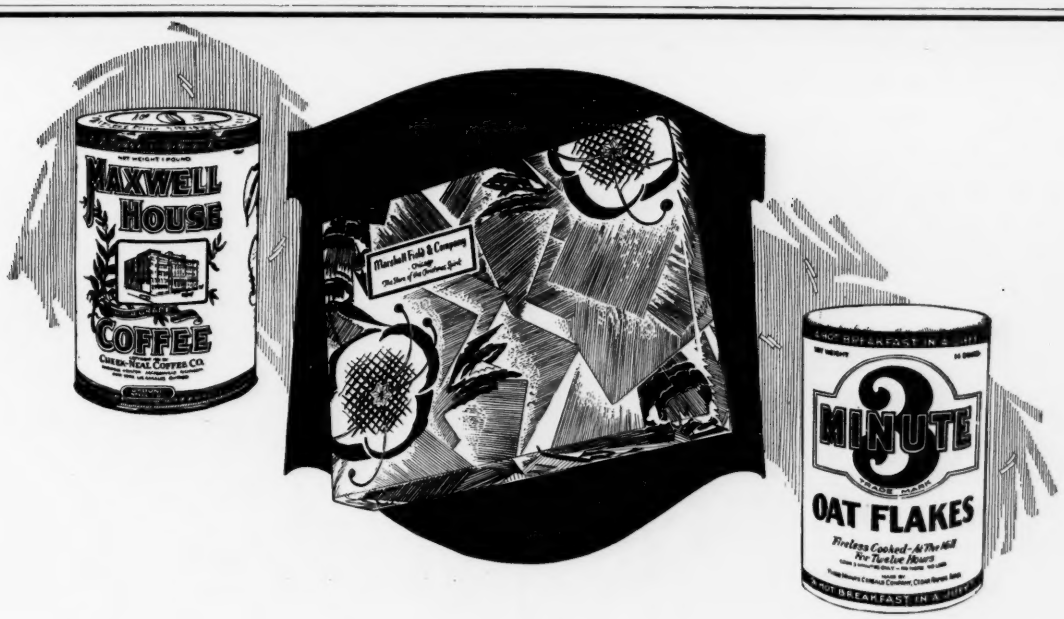
831 West Van Buren Street. Chicago, Ill.

L. H. BRODRICK
New York City

SAM O. RAUH
Cincinnati, Ohio

STRIEBY and BARTON
Hollywood, Calif.

Prepared and printed by
Service Department,
"Modern Packaging"



COMPLETE LITHOGRAPHIC SERVICE

The Theo. A. Schmidt Litho. Co. has grown to its present size, because of its ability to render a complete service to manufacturers of packaged products—because of its ability to intelligently interpret the manufacturers' requirements and aid him in successfully presenting his product to the buying public.

Back of their products stands a sound company of practical executives, supported by skilled artists and craftsmen of the highest type. Their knowledge and experience is at your disposal.

They are proud to present a few of the firms they are serving today—firms who have been on their books for years and whose judgment in the selection of the most able lithographer carries much weight.

National Tea Co.
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Carnation Milk Co.
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Quaker Oats
3 Minute Cereal
Maxwell House Coffee
Silver King Ginger Ale
Stokey Canned Foods
Lange Canned Foods
Bunte Bros. Candy Co.

Talk it over with Schmidt. Suggestions and ideas are for your asking.

They have complete facilities for originating and producing:

1—Lithographed Labels and Wrappers
2—Distinctive Covering Papers
3—Window Displays, Counter Displays, Posters and Direct Mail Pieces.

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1050 FULLERTON AVE. DISTINCTIVE COLOR LITHOGRAPHY CHICAGO

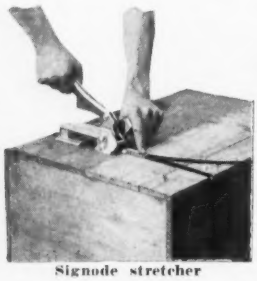
SIGNODE STEEL STRAPPING COMPANY

2627 North Western Avenue, Chicago, Ill.

Branch Offices: Boston, New York, Philadelphia, San Francisco, Detroit, Greensboro, N. C., New Orleans, St. Louis, Minneapolis

Manufacturers of: Tensional Steel Strapping Equipment, Automatic Wire Tying Machines and Shipping Room Supplies

Send for complete catalog.



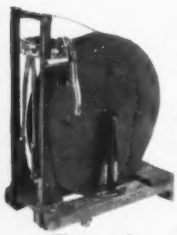
Signode stretcher

The Signode System of package reinforcement is a method of tightly encircling a shipment with bands of steel and securely sealing the overlapping ends with a metal sleeve called a Signode. This reinforcement greatly strengthens containers, permitting safe use of lighter, less expensive lumber which saves freight. The steel bands keep shipments free from damage, reduce claims and losses, and prevent pilfering.

Tools are available for any size strapping—a stretcher to tighten the band and a sealer to crimp the strap ends within the Signode. Seals are made in both single and double crimp sizes for all widths of band, depending on the work required.

Your own trade mark may be lithographed on the seals—a very effective advertising medium and insurance against lost shipments.

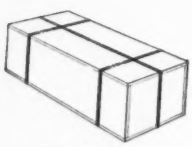
Trade-marked Signode



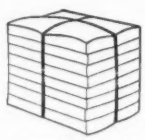
Floor reel

Strapping is fed from an easily transported floor reel, or if preferred, from a reel hung overhead.

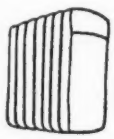
Signode is easily and quickly applied to most every type of shipment, from small parcel post and express packages to great bundles of steel sheets. It reinforces boxes, crates, cartons, etc., and is a secure binding for bales and bundles of many kinds.



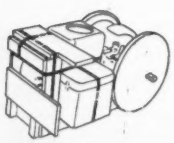
Wooden box



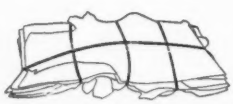
Bundled books or magazines



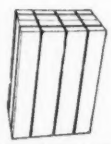
Baled goods



Partial crate



Bundle of irregular shapes



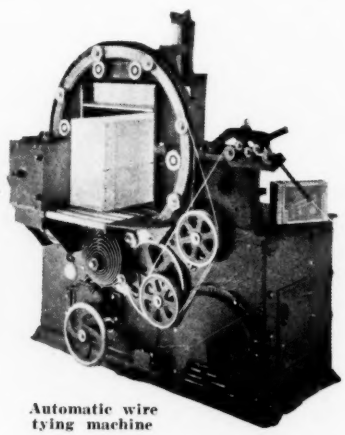
Oversize fibre carton

Typical car of barrels

Various commodities shipped in carloads are bundled together in bulk by Signode strapping. Carloading by this means, instead of slow, costly wood blocking, is increasing with worthwhile savings for both shipper and railroad.

Power sealers and stretchers can be provided for heavier sizes of strap where compressed air is available.

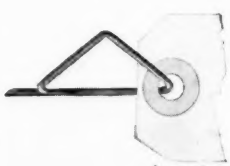
Automatic wire tying machinery is also available where mass production necessitates rapid tying of packages.



Automatic wire tying machine

We also manufacture all kinds of nailed-on strapping in plain or embossed styles, and Loop-the-Loop round wire reinforcement. Pail Clasps, Tag Fasteners and Corner Irons complete the line.

Loop-the-Loop wire joint



Apex tag fastener

Apex corner iron

If you have a shipping problem, put it up to Signode. We advocate no particular type or kind of shipment, but will help you make the most of what you have. Ask for demonstration or write today for catalog No. 15 C.

Showing things in their true light

PRESENTING your package, so that the sales resistance starts to crumble on sight is your ever present problem.

"Many a rose is born to blush unseen" and just as many products have been licked before they were put on sale.

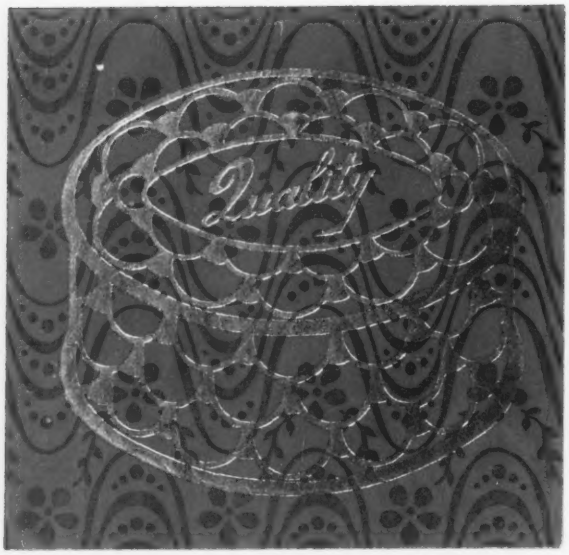
Avoid the pitfall of inadequately presented merchandise by consulting ROWELL, who has created innumerable packages that demand attention the moment displayed.

Packages created by ROWELL *sell.*

E. N. ROWELL CO., INC.
BATAVIA, N. Y.

ROWELL PAPER BOXES

YES~WE CAN MAKE IT



(Paper by Kupfer Bros. Co.)

The container covered with wraps produced by Rowell stands out as a colorful magnet to attract the passing eye. A sales stimulus.

When the machinery of the ROWELL organization starts turning for you there is at your command the experience of years of merchandising service—the designing of intriguing boxes—the production of box wraps and labels—the making of a complete box that is distinguishable anywhere as a ROWELL product.

The fidelity and cooperation of ROWELL is priceless for we feel that we are assuming our share of sales responsibility for your products. This responsibility is directly reflected in every complete container that we produce.

E. N. Rowell Co., Inc.
Batavia, N.Y.

New York Sales Representatives: BRISTOL-SMITH, INC.
41 Park Row, Room 805 Telephone: Cortlandt 1574-5

Chicago Office: H. G. MACKAY, Manager
180 North Wacker Drive Telephone: Franklin 3517-8-9

ROWELL PAPER BOXES

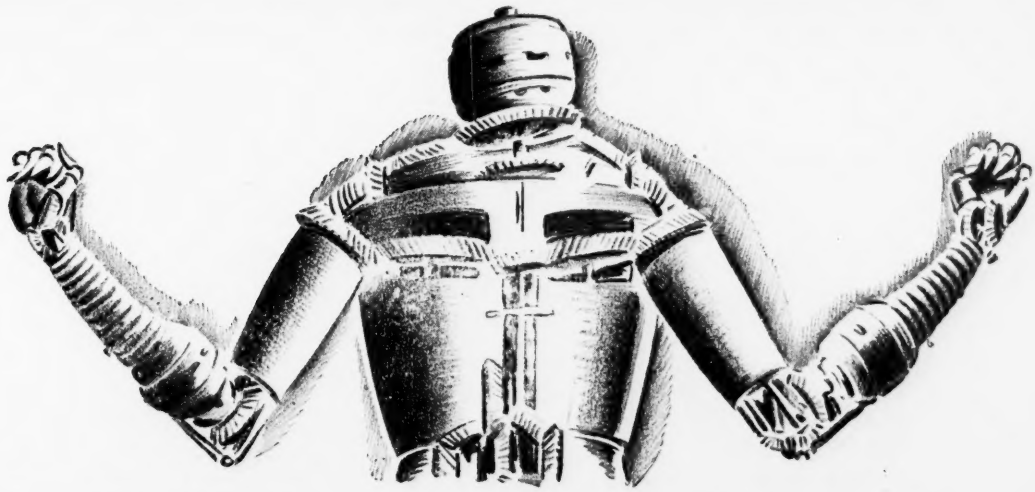
This advertisement appeared in the November. 1928 issue of Modern Packaging

Prepared and Printed by Service Department Modern Packaging

Special
PRODUCTION MACHINES

A Division of PNEUMATIC SCALE CORPORATION, LIMITED

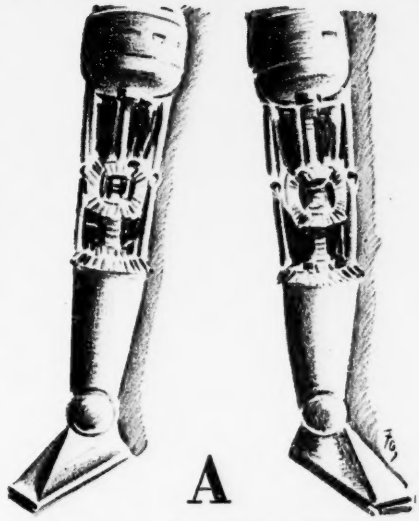
For over thirty-five years Pneumatic Scale Corporation, Limited, has manufactured automatic labor-saving machinery for many of the world's largest producers of merchandise.



For Sale-Mechanical Man Power

Have you a packaging operation that is being done by slow, expensive hand labor because no standard machines have ever been built to do the work? Would you like to increase the output of some of your present machines? Would you like to improve the finished appearance of your product?

If your answer is yes to any of these questions, Special Production Machines, Inc., can help you. In the last few years we have been occupied in serving a number of the leading manufacturers in the country—designing and building efficient *mechanical* man power (machines) that they have long needed but have never been able to secure. Our work in these plants has embraced the solution of widely varying types of production problems including designing and building new machines, the speeding of existing machinery and the redesigning of semi-automatic machinery to make it completely automatic.



A MACHINE *can do it!*

Quite a little of this work has included the improvement of packaging operations. Our engineers are particularly qualified to help you with packaging problems. If you are interested in knowing how we function, we shall be glad to send you a booklet describing the services of Special Production Machines, how it operates and how it is serving manufacturers.

SPRAGUE-SELLS DIVISION

Of

JOHN BEAN MFG. CO.

308 W. WASHINGTON STREET, CHICAGO, ILL.

Factories:

BUFFALO, N. Y. HOOPESTON, ILL.

Manufacturers and Designers of Automatic Filling Machines

PRODUCTS:

M & S Filler and Special Automatic Filling Machines.

FILLING MACHINES:

The Sprague-Sells M & S Filler is practically a universal filling machine. It fills such products as corn, pumpkin, grated pineapple, fruit, butter, milk, pulp, catsup, malt syrup, soup, meat, flaked fish, oils, soap, preserves, ice cream, cheese—in fact any liquid, semi-liquid or pasty substance—into any kind or shape of can, jar or carton. This filler is made for all sizes of containers from 2 ounces to 1 gallon. The filler illustrated is known as the No. 2 and is suitable for containers holding from 1 to 2 pounds. A No. 1 size is also built, handling containers smaller than 1 pound. A third size, known as No. 10, is for No. 5 to No. 10 cans. The No. 1 and No. 2 fillers require 1½ H.P.; the No. 10, 2 H.P. All sizes are supplied either for belt or motor drive. The No. 1 and No. 2 machines each weigh 1,500 pounds; the No. 10, 2,460 pounds.

Sprague-Sells M & S Filler

CAPACITY:

The capacity of M & S Fillers depends largely on the nature of the product and the size of the containers. Usual capacity is from 100 to 125 cans per minute. Some products can be filled as rapidly as 180 to 200 cans per minute.

OPERATING DETAILS:

M & S Fillers are rotary and receive and discharge the containers in a single line. The containers are usually fed to the filler through a can chute as illustrated, although for odd size and shape containers a different style feed may be advisable, such as a belt or disc type.

Each container is timed into the machine to register under a filling nozzle leading from a measuring chamber. A hopper contains the material to be filled, from which it is fed down into cylindrical measuring chambers. These chambers and the accompanying plungers resemble in design and action the familiar principle of the automobile cylinder and piston, the machine having six pockets or cylinders.

The rotation of the cylinders under a stationery cut-off plate serves to open and close them. When the measuring chamber is filled and closed from above, a piston mounted in each chamber and actuated by passage over a cam plate below, rises and pushes the measured product through a side discharge opening leading from the chamber to the discharge nozzle. A supplementary small reciprocating plunger working in the nozzle serves as a final cut-off and clears the nozzle of material, preventing waste or drip. The action of the filler is smooth and continuous at any speed from 20 cans per minute up. Large capacity is assured while permitting ample time for the measuring and filling.

After filling, the containers are discharged on a revolving disc, from which they can be conveyed on belts to the sealing or closing machine.

NO-CAN-NO-FILL DEVICE:

Except for very light or very small containers, all M & S Fillers are equipped with an automatic no-can-no-fill device which positively prevents any material being discharged from the nozzles when a container is not in proper position under them. The no-can-no-fill attachment is positive, simple, and cannot get out of order.

CONSTRUCTION DETAILS:

All parts which come in contact with the product being handled are made of brass. All other parts are of cast iron or steel. On some products it is advisable to use contact parts of a metal other than brass; for instance, steel, monel metal, nickel, or aluminum. Such metals can readily be furnished. When required, supplementary mixing or heating equipment can be furnished.

M & S FILLERS ARE:

1. ACCURATE—Fill with less than 1/10th ounce variation.
2. FAST—Any speed up to 150 cans per minute.
3. NOT WASTEFUL—An almost human no-can-no-fill device absolutely prevents waste.
4. DURABLE—Many Sprague-Sells Fillers built 15 to 20 years ago are still giving excellent service.

SPRAGUE-SELLS EQUIPMENT IS USED BY A GREAT MAJORITY OF ALL CANNERS. THE MOST COMPLETE LINE OF CANNING AND PACKING EQUIPMENT IN THE WORLD.

XUM

The Outstanding Achievement

In the 30 Years History of the C. R. Whiting Co. is the

New Line of

AMERICAN BEAUTY PAPERS

Note the Waterproof Prints in One to Six Colors
The Lacquer Line of Gold and Silver Papers
Plain and Embossed in brilliant reflection in practically
Tarnish Proof Uniform Metallic Shades.

The Variegated Colorings and
Unique Effects Make us Proud
to say — "MADE IN U. S. A."

The Crystalized **"SPARTEX"** is not only exceptional for packaging but also for Display Work.

SEND FOR NEW SAMPLE BOOKS

American Beauty Papers—Mocotan Imitation Leather
Sealon Binding and Leather Cloth—**Spartex** Waterproof Tapestry.

C. R. Whiting Co., Inc.

281-287 New Jersey Railroad Ave., Newark, New Jersey

MAILLER SEARLES, INC.
135 Fremont St.
San Francisco, Cal.

JOHN S. WILLARD & SON
306 E. 4th St.
Los Angeles, Cal.

Standard
SEALING EQUIPMENT CORPORATION

Rawson Street and Queen's Blvd., LONG ISLAND CITY, N. Y.

CHICAGO, ILL.
208 West Washington St.

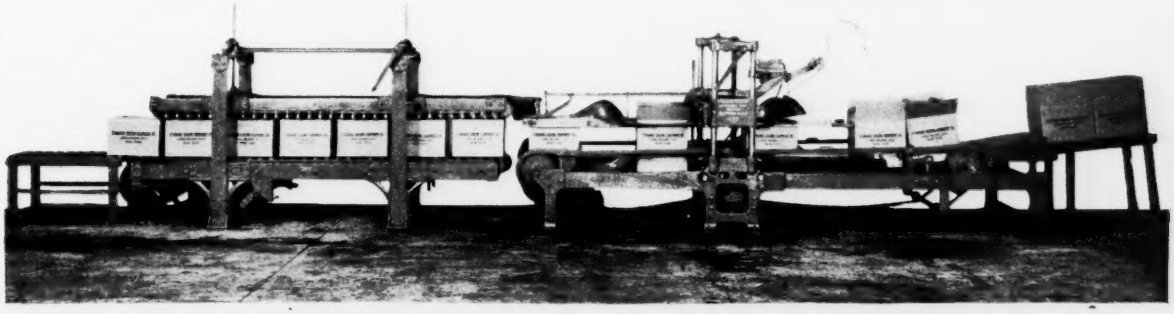
LONDON, ENGLAND
Windsor House
Victoria Street, S. W. I.

SEALING MACHINE FOR CORRUGATED OR SOLID FIBRE SHIPPING CASES:

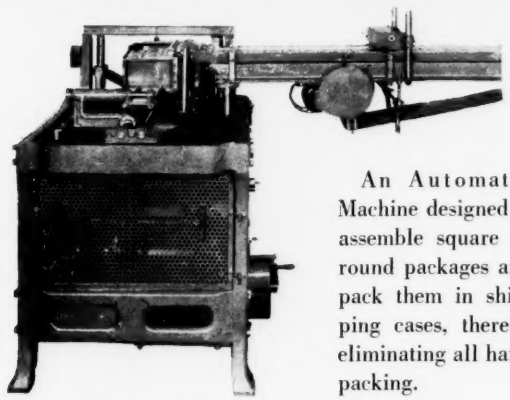
Standard Sealing Machines automatically seal both top and bottom of paper shipping cases in one operation.

Standard Sealers are designed to meet any capacity requirement and are adjustable from one size to another. The average adjustment can be made in sixty seconds.

They are 100 per cent automatic and do away absolutely with all labor ordinarily used in the sealing operation.



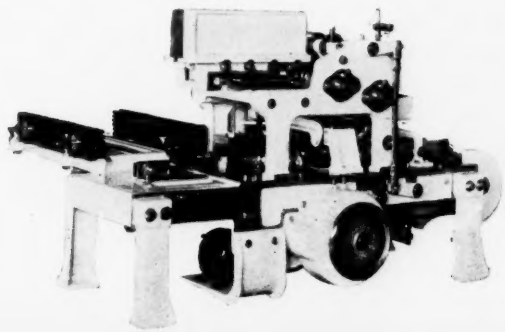
STANDARD CASE PACKING MACHINE:



An Automatic Machine designed to assemble square or round packages and pack them in shipping cases, thereby eliminating all hand packing.

BANDING MACHINE:

This machine is designed and is now in use by one of the larger cigarette manufacturing companies to automatically apply a paper sealing strip or label over the top and down the ends of the cigarette carton which contains ten packages of cigarettes.



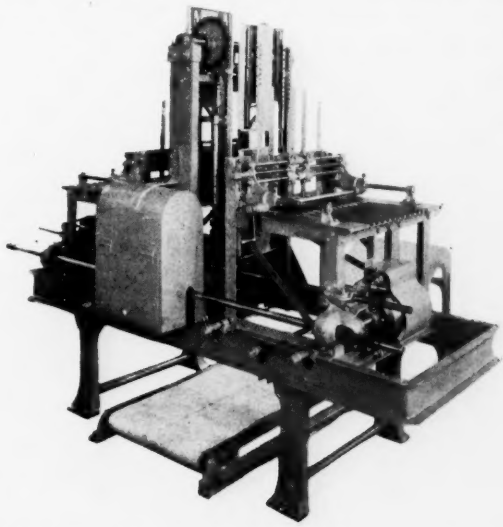
The machine operates at a speed of from thirty to thirty-five cartons per minute.

Its function is absolutely automatic and it has proven to be a tremendous labor-saver.

PARTITION ASSEMBLING MACHINE:

A machine designed to assemble the slotted pieces of corrugated board which go to make up corrugated partition nests used in packing glassware in corrugated cases.

The machine has a capacity of from 900 to 5,200



finished assemblies per hour, depending upon the number of cells in each assembled piece.

One operator is required to feed the pieces into the magazines.

Machine is readily adjustable from one size partition to another.

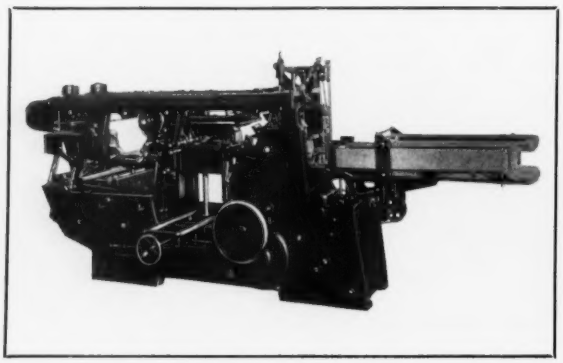
STOKES & SMITH CO.

U. S. A.
FRANKFORD
PHILADELPHIA

PACKAGING
MACHINERY

London Office
23 GOSWELL
R O A D

WRAPPING MACHINES
VOLUMETRIC MEASUREMENT
BAG AND ENVELOPE SEALERS
HIGH SPEED AND MODERATE SPEED
CARTON FILLING AND SEALING MACHINES
COMBINATION EQUIPMENTS FOR PACKAGES
IMPROVED DEVICES FOR DIFFICULT MATERIALS
GROSS WEIGHT SCALES NET WEIGHT SCALES



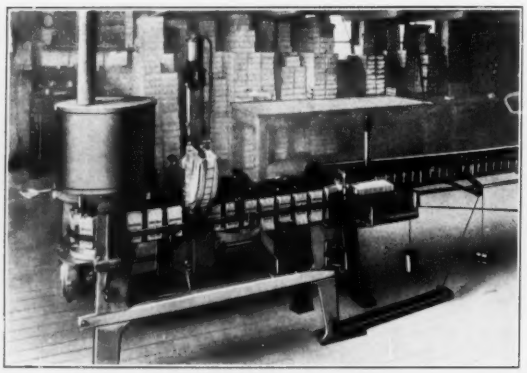
Automatic Package Wrapping Machine widely used where the best package is desired

By well-considered selection and use of our various Package Filling, Sealing and Wrapping Machines there are possible savings:

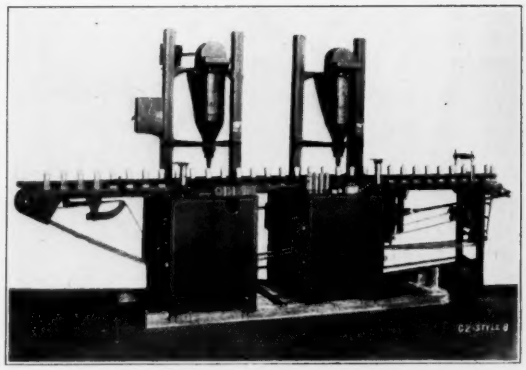
In the material of which the package is made;
In the labor of packing and handling the package;
In the product placed within the package by more accurate measuring and weighing;

and there are possible betterments:

In the display value of the package;
In its selling power;
In the preservation of the contents.

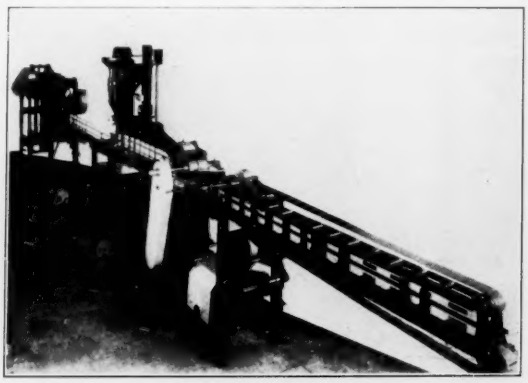


High speed, continuous motion Carton Filling and Sealing Machine with Volumetric Filler.



Powder Filling Machine with Capping Device

Choice of package machinery should be made with care; for high production, fully automatic single purpose machines operating at a high rate of speed; for the smaller output, machines of moderate speed adjustable for size of package and accommodating various packages and materials. Even the more difficult materials are handled accurately and with a minimum amount of dust.



Bottom and Top Sealer with Gross Weight Scale, adjustable for various sizes of packages

I AM the Package, the abiding place and caretaker of your product from your place of manufacture to the household. Dress me carefully and well that I may be a credit to you and the product housed within me, that I may be gladly received wherever I go and prepare a lasting welcome for those of my kind that many more may follow me.

Spare me the curse of the lowly garbed that I may not be the last of my line, that I may not spend my life in useless pining on the shelves of the merchants, gathering dirt and dust, greeted only at time of inventory with derision and regret as a laggard and a money loser—nay, rather dress me well in bright colors and designs (like those of the Walther coverings) that I may do thee and thine honor and increase thy sales to great numbers.

Sheets of the Walther Coverings to enable you to have sample packages covered for selective purposes gladly supplied

Manufacturers

WALTHER & COMPANY
(INCORPORATED)

102-114 KANE ST. BROOKLYN, N. Y.

Representative in Canada
W. P. BENNETT
21 King St., East Toronto

Pacific Coast Representative
JAY PLATT HAMERSLAG
635 Rum Bldg., San Francisco, Cal.

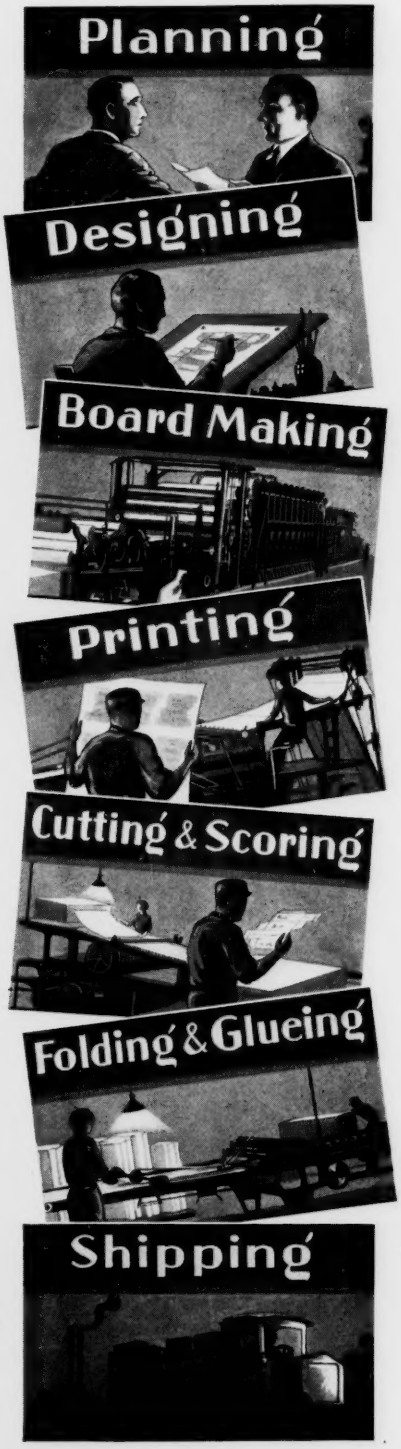
"the dress of a handsome box"

SUTHERLAND PAPER COMPANY

MAIN OFFICES AND MILLS

KALAMAZOO, MICHIGAN

Manufacturers of Folding Cartons and Paper Products



A COMPLETE SERVICE IN THE DESIGN AND PRODUCTION OF SUPERIOR FOLDING CARTONS AND COUNTER DISPLAY CONTAINERS.

THERE is a distinct advantage for users in securing folding carton requirements from a really *complete* source of supply. Each step in the manufacture of Sutherland paper products is accomplished within one organization with most modern equipment and under the direction of Sutherland specialists.

Makers of the famous "SNOW BRAND" whiter patent coated box board

Nationally Known — SUTHERLAND PAPER CO. KALAMAZOO MICH. — Nationally Used

HILLSIDE, N. J.

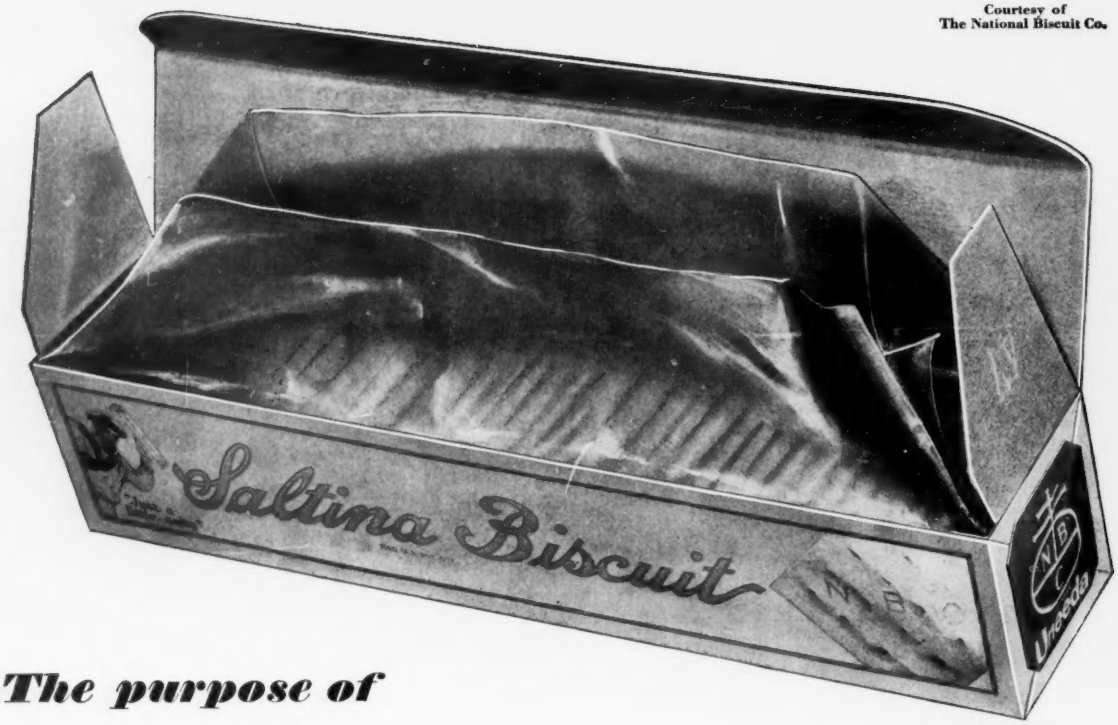
EXCLUSIVELY, *Tin Tubes*

Sun Tubes .....have ..... only what a plant must have,..... to grow faster than any other tube plant known.

Frank J. Sprague
Pres.

P. S. Minimum requisition,
1000 gross

Courtesy of
The National Biscuit Co.



The purpose of

CARTON LINING *is* PROTECTION!

Shortening and essential oils have a decided tendency to penetrate both carton and wrapper. To protect the appearance of your package it is necessary to line the carton with an absolutely grease-proof paper. Then too, a grease-proof paper with a golden brown color and shining spotlessness will add to the appearance of your product when the package is opened.

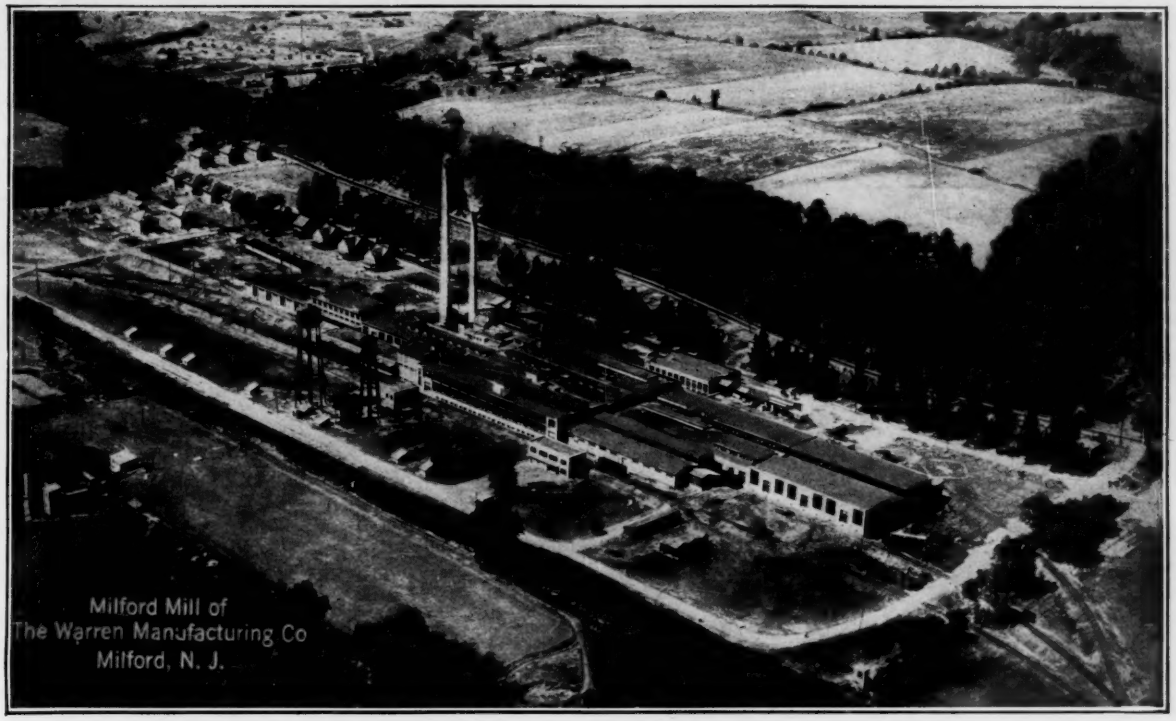
Riegel's Amber Carton Lining is used and approved by many leading bakeries throughout the country.

CELOWAX, another Riegel Paper, is a new development in outside carton wrappers. Moisture-proof, it will preserve and protect both carton and product. Transparent, the advertising value of your carefully designed package is preserved and enhanced.

RIEGEL'S WAXED
GLASSINE
Jewel Brand

MADE BY
THE WARREN MANUFACTURING COMPANY
342 MADISON AVENUE
New York City

Sample sheets or rolls for experimentation gladly supplied. Write for full particulars.



Airview of the Milford, N. J., Plant of

The WARREN MANUFACTURING COMPANY

Executive Offices

342 Madison Avenue

NEW YORK, N. Y.

The five paper machines in this plant are devoted exclusively to the manufacture of

RIEGEL'S JEWEL BRAND GLASSINE

and

RIEGEL'S WAXED GLASSINE

Wrapped in transparent, moisture-proof glassine, the individuality of your carefully designed carton will be preserved and the contents will be protected from unfavorable atmospheric conditions. Our Research Laboratory is at your disposal to help determine the most efficient wrapper for your carton or package. Write for samples and complete information.

Courtesy of
The National Biscuit Co.

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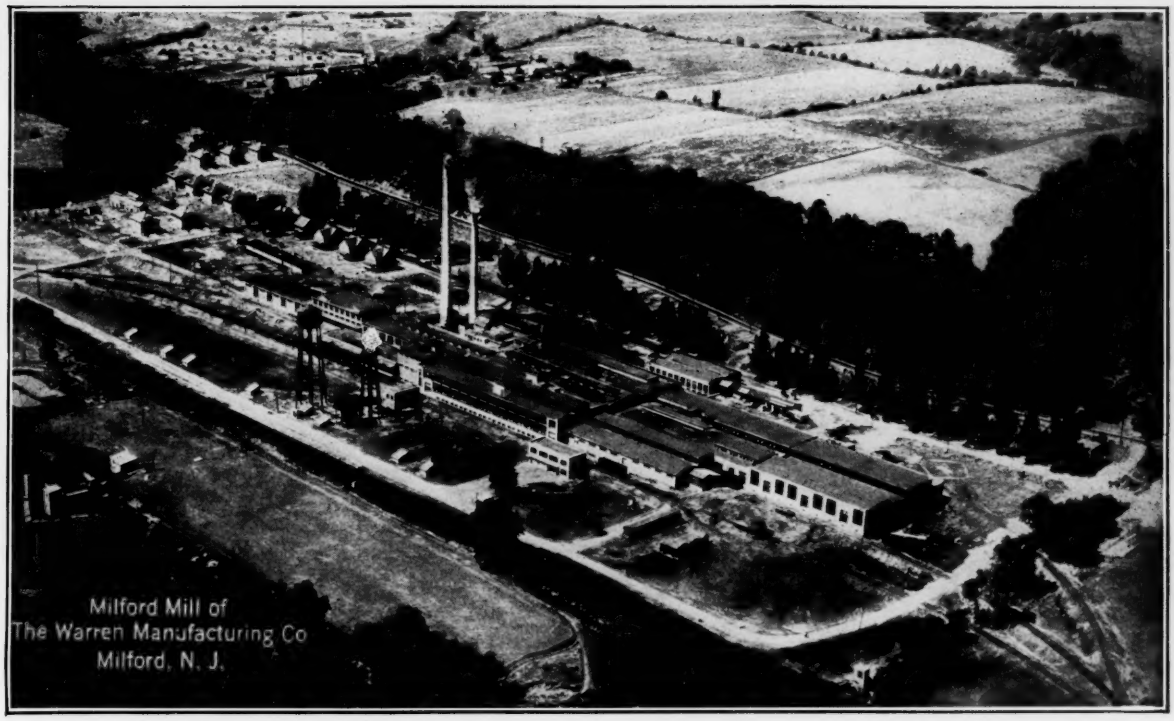


Airview of the Milford, N. J., Plant of

The WARREN MANUFACTURING COMPANY

Executive Offices

342 Madison Avenue

NEW YORK, N. Y.

The five paper machines in this plant are devoted exclusively to the manufacture of

RIEGEL'S JEWEL BRAND GLASSINE

and

RIEGEL'S WAXED GLASSINE

Wrapped in transparent, moisture-proof glassine, the individuality of your carefully designed carton will be preserved and the contents will be protected from unfavorable atmospheric conditions. Our Research Laboratory is at your disposal to help determine the most efficient wrapper for your carton or package. Write for samples and complete information.

TRIANGLE PACKAGE MACHINERY CO.

416-420 WEST HURON STREET CHICAGO, ILL.

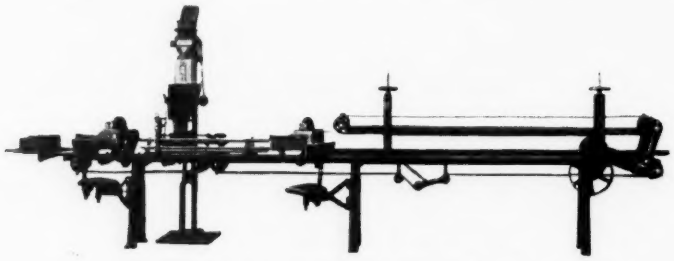
39 CORTLANDT ST., NEW YORK 443 S. SAN PEDRO ST., LOS ANGELES

Manufacturers of

CARTON SEALERS AUTOMATIC WEIGHERS FILLERS PACKERS, ETC.

Practical - Flexible - Dependable

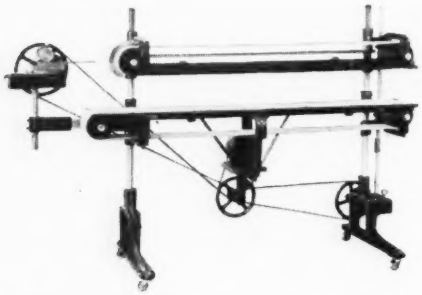
No Mechanic Required



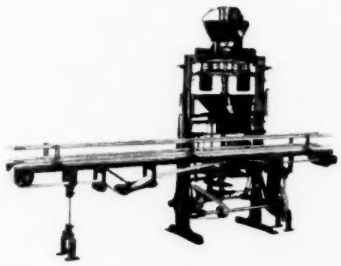
Production Up to 10,000 Packages Per Day

Class "SA" Top and Bottom Carton Sealer, with "SB" Weigher

The Triangle Bottom and Top Carton Sealer and Weigher is the most flexible and simple, as well as the least expensive packaging equipment on the market. Seals and fills cartons of all sizes at a speed of 20 to 25 per minute, with the aid of two operators. Changed from one size carton to another in 5 to 10 minutes by the operators. Perfect workmanship. Floor space, 3½′ x 19′. Weight, 2,500 pounds.



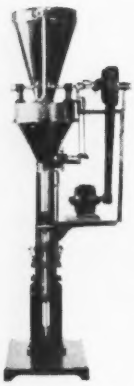
Class "SR" Portable Top or Bottom Sealer



Class "SE" Automatic Biscuit and Cracker Filler, with Automatic Conveyor

CARTON SEALER:

An excellent machine for small runs of various sized cartons. Requires one operator. Produces 20 one-end sealed cartons per minute. Instant adjustment for bottom or top sealing. Floor space, 3′ x 7′. Weight, 500 pounds.



Class "SN" Auger Packer

AUGER PACKER:

For filling loose, or under compression, such products as cocoa, face or talcum powders, ground spices, etc. Most accurate and flexible Packer on the market. Fills cans, bottles, cartons, bags, etc., at a speed of 20 to 25 per minute. Easily cleaned. One operator required. Floor space, 3′ x 3′. Weight, 750 pounds.

FILLER:

This Filler is sold with or without conveyor. Measures accurately such products as small biscuits, crackers, nuts, etc., at a speed up to 60 discharges per minute. Fills cans or any kind of carton with or without liner. Floor space, 4′ x 10′. Weight, 1,500 pounds.

Class "SB-A"

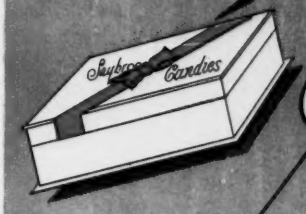
NET WEIGHER:

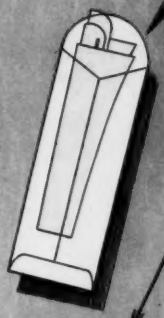
This machine weighs with an accuracy of 1/16 ounce or better, a greater variety of products than any other weigher built. We manufacture ten different sizes and types of weighing machines, ranging in capacity from two ounces to ten pounds, at a speed up to 75 discharges per minute. These weighers are so designed as to permit instant cleaning when running different kinds of products. Floor space, 3′ x 3′. Weight, 500 pounds.

PAPERGLAS

GREASEPROOF MOISTURE PROOF

Transparent



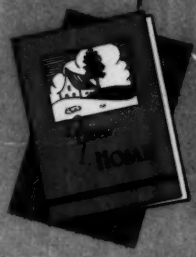


Economical Protection for Your Goods

ALWAYS clean, fresh and attractive. Paperglas keeps your products in the show window of increased sales. Tough, and durable, it insures against soilage and mutilation.

Sold in sheets or rolls. Plain or embossed in sixteen beautiful designs.

Write for samples, prices or suggestions on—



PAPERGLAS

WESTFIELD RIVER PAPER COMPANY, *Inc.*
RUSSELL, MASSACHUSETTS
New York Sales Office: 501 Fifth Avenue

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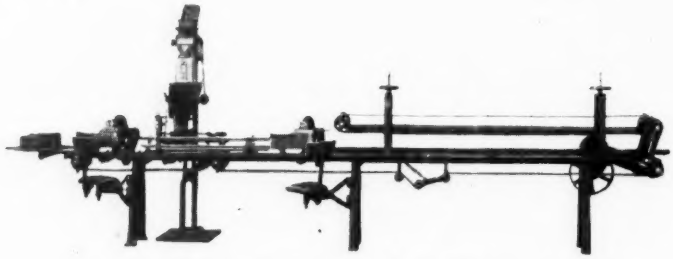

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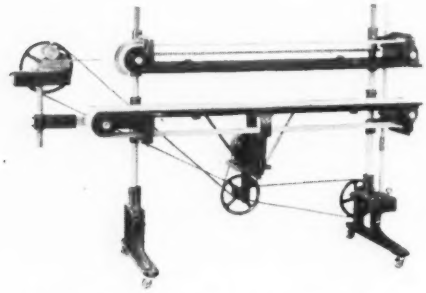

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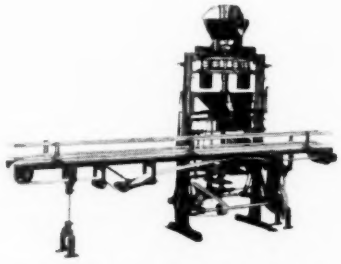

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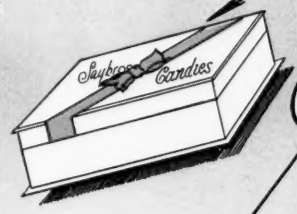
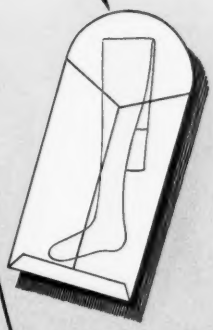
Transparent





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RUSSELL, MASSACHUSETTS
New York Sales Office: 501 Fifth Avenue

WILLIAMSON GLUE AND GUM WORKS

Incorporated 1914

2327 WEST EIGHTEENTH ST., CHICAGO, ILLINOIS

We Do Not Believe There is Any Substitute for Quality

COLD LIQUID GLUES AND PASTES FOR ALL TYPES OF MODERN PACKAGING MACHINES

Odorless, Sanitary Adhesives Used Without Heat For:

LABELING

On wood, fibre, glass or metal
Pick-up Gums and Lap Label
Paste for tin cans
Tin Paste for spot labels on tins
Bottle Labeling Gums
Waterproof Labeling Glue

CARTON MAKING AND TUBE WINDING

CARTON SEALING

CARTON WRAPPING

Loose Wrap
Tight Wrap
Separate End Seals

DuPONT CELLOPHANE

Normal
Moistureproof

SHIPPING CASE SEALING

For hand or machine sealing of fibre or corrugated boxes

SPECIAL ADHESIVE PROBLEMS GIVEN PROMPT ATTENTION — WORKING SAMPLES SENT ANYWHERE WITHOUT CHARGE OR OBLIGATION

SHIPMENTS MADE IN 5-GALLON AIR-TIGHT STEEL DRUMS OR IN 50-GALLON BARRELS

BUYER'S DIRECTORY SECTION

THE policy of the Packaging Catalog in the Directory Section is to list every reliable American manufacturer of machinery, equipment or supplies selling to the packaging industries (as far as we can locate them) without charge under as many headings as is required for an adequate showing of their products. It is only by this policy that the directory can be made representative of the facilities of the entire packaging field.

All concerns represented in the catalog section of this volume are listed in bold face type under appropriate headings and further prominence is conferred by giving in each instance the page or pages upon which their data appears. This feature serves as a time saver and it is believed will increase the detailed information and data packaging concerns seek.

The recommendation is earnestly made that the Directory be used in conjunction with the Catalog pages, as much valuable information can be found concerning products, if reference is made to the concerns whose page numbers are giving under the various subject headings.

Buyers' Directory of the Packaging Industries

For information concerning equipment listed below, see catalog pages indicated by numbers appearing after advertisers' listing

ABSORBENT WADDING

Kimberly-Clark Co., Neenah, Wis.
Rochester Folding Box Co., Rochester, N. Y. —117
International Paper Co., New York, N. Y.

ADHESIVES

Adex Mfg. Co., Baltimore, Md.
Arabol Mfg. Co., New York, N. Y.—67
Cibara Mfg. Co., St. Louis, Mo.
Consumers Glue Co., St. Louis, Mo.
Dewey & Almy Chemical Co., Cambridge Mass.
Findley Co., F. G., Milwaukee, Wis.
Frohman Chemical Co., Sandusky, O.
Grasselli Chemical Co., Cleveland, O.
Leyland Co., Inc., Thos., Readville, Mass.
Mechling Chemical Co., Camden, N. J.
National Adhesives Co., New York, N. Y.
Philadelphia Quartz Co., Philadelphia, Pa.
Russia Cement Co., Gloucester, Mass.
Standard Sealing & Equipment Corp., Long Island, N. Y.—123
Stein-Hall & Co., New York, N. Y.
Williamson Gum & Glue Works, Chicago, Ill.—Facing 131

AUTOMATIC CARTON LOADING MACHINES

Anderson Co., Inc., E. D., New York, N. Y.—65-66
Cartoning Machinery Co., Newport, R. I.—83
Jones & Co., Inc., R. A., Covington, Ky.
National Packaging Machinery Co., Boston, Mass.—106-109
Redington Co., F. B., Chicago, Ill.

AUTOMATIC PACKAGING MACHINERY

American Machine & Foundry Co., Brooklyn, N. Y.
Anderson, Inc., E. D., New York, N. Y.—65-66
Arenco Machine Co., New York, N. Y.—68-69
Automat Molding & Folding Co., Toledo, O.—70-71
Battle Creek Wrapping Machine Co., Battle Creek, Mich.—72
Brown Bag Filling Machine Co., Fitchburg, Mass.
Cartoning Machinery Corp., Newport, R. I.—83
Ferguson Co., J. L., Joliet, Ill.—88-90
Hesser Machine Co., New York, N. Y.
Hoepner Automatic Machinery Corp., Buffalo, N. Y.—95
Johnson Automatic Sealer Co., Ltd., Battle Creek, Mich.—97-100
National Packaging Machinery Co., Boston, Mass.—106-109
Package Machinery Co., Springfield, Mass.—110-111
Packaging Machinery Co., Yonkers, N. Y.
Peters Machinery Co., Chicago, Ill.—113
Pneumatic Scale Corp., Norfolk Downs, Mass.—115-116
Scale & Machinery, Inc., New York, N. Y.—118
Small Mfg., C. T., St. Louis, Mo.
Stokes Co., F. J., Philadelphia, Pa.
Stokes & Smith Co., Philadelphia, Pa.—124
Triangle Package Machinery Co., Chicago, Ill.—130

BAGS, BURLAP, COTTON

American Bag Co., Memphis, Tenn.
American Mills Co., Atlanta, Ga.
Bartley Mfg. Co., New York, N. Y.
Bell Bag Co., Inc., Baltimore, Md.
Bemis Bros. Bag Co., St. Louis, Mo.
Central Bag Mfg. Co., Chicago, Ill.
Chase Bag Co., St. Louis, Mo.
Cleveland-Akron Bag Co., Cleveland, O.
Eastern Burlap Bag Co., Hartford, Conn.
Feitel, Dan W., Bag Co., New Orleans, La.
Fulton Bag & Cotton Mills, Atlanta, Ga.
Morrison & Risman, Buffalo, N. Y.
National Bag Co., Naperville, Ill.
Philadelphia Bag Co., Philadelphia, Pa.
Walker, J. S., & Co., Louisville, Ky.

BAGS (Mailing)

Bemis Bros. Bag Co., St. Louis, Mo.
Chase Bag Co., Cleveland, O.
Cleveland-Akron Bag Co., Cleveland, O.
Mason Box Co., Attleboro Falls, Mass.
Milwaukee Bag Co., Milwaukee, Wis.
National Bag Co., Naperville, Ill.
Schuman Co., Frank G., Chicago, Ill.

BAGS (Paper)

Advance Bag Co., Middletown, O.
American Mills Co., Atlanta, Ga.
American Paper Goods Co., Kensington, Conn.
American Paper & W. W. Co., Cincinnati, O.
Angelus Bag & Paper Co., Los Angeles, Cal.
Angier Corp., Framingham, Mass.
Arkell Safety Bag Co., New York, N. Y.
Arkell & Smith, Canajoharie, N. Y.
Atlanta Paper Co., Atlanta, Ga.
Bates Valve Bag Co., Chicago, Ill.
Bell Bag Co., Inc., Baltimore, Md.
Bemis Bro. Bag Co., St. Louis, Mo.
Brooklyn Standard Paper Co., Brooklyn, N. Y.
Brown Paper Goods Co., Chicago, Ill.
Burhop Paper Co., Chicago, Ill.
California Bag & Paper Co., Emeryville, Cal.
Chase Bag Co., Cleveland, O.
Chatfield & Woods Co., Cincinnati, O.
Chicago-Detroit Bag Co., Chicago, Ill.
Cleveland-Akron Bag Co., Cleveland, O.
Columbia Paper Bag Co., Baltimore, Md.
Continental Paper & Bag Mills, New York, N. Y.
Cramer-Force Co., Rochester, N. Y.
Cupples, Saml., Woodenware Co., St. Louis, Mo.
E-Z Opener Bag Co., Decatur, Ill.
Fulton Bag Co., Fulton, N. Y.
Fulton Bag & Cotton Mills, Atlanta, Ga.
Glassine Bag & Novelty Co., Rhinelander, Wis.
Hercules Paper Bag Co., Reading, Pa.
Hollis & Duncan, Chicago, Ill.
Howland Bag & Paper Co., Dexter, Ill.
Hudson Bag Co., Brooklyn, N. Y.
Jaite Co., Jaite, O.
Mason Box Co., Attleboro Falls, Mass.
Memphis Bag Co., Memphis, Tenn.
Milwaukee Bag Co., Milwaukee, Wis.
National Paper Co., Atlanta, Ga.
Port Huron Sulphite & Paper Co., Port Huron, Mich.
Raymond Bag Co., The, Middletown, O.
Royal, Thos. M., & Co., Philadelphia, Pa.
Taggart Bros. Co., Watertown, N. Y.
Tartentum Paper Mills, Pittsburgh, Pa.
Taylor Paper Co., Oakland, Cal.
Union Bag & Paper Co., New York, N. Y.
Union Paper & Twine Co., Cleveland, O.
U. S. Paper Goods Co., Cincinnati, O.
Universal Paper Bag Co., New Hope, Pa.
Valve Bag Co. of America, Toledo, O.
Wayne Paper Goods Co., Ft. Wayne, Ind.
West Jersey Paper Mfg. Co., Camden, N. J.
Western Paper Goods Co., Cincinnati, O.
Wisconsin Paper & Products Co., Milwaukee, Wis.
Wortendyke Mfg. Co., Richmond, Va.

BAGS, TRANSPARENT PAPER (Glassine, Cellophane, Waxed Paper)

American Paper Goods Co., Kensington, Conn.
American Tissue Mills, Holyoke, Mass.—63
Bemis Bros. Bag Co., St. Louis, Mo.
Brown Paper Goods Co., Chicago, Ill.
Bettner Co., Ben C., Devon, Pa.
Birn & Wachenheim Co., New York, N. Y.
Central Waxed Paper Co., Chicago, Ill.
Deerfield Glassine Co., Monroe Bridge, Mass.
Driver Co., John M., Philadelphia, Pa.
Du Pont Cellophane Co., New York, N. Y.—87
Glassine Bag & Novelty Co., Rhinelander, Wis.
Hartford City Paper Co., Hartford City, Ind. 94
Herz Co., Alexander, New York, N. Y.
Mathias & Freeman Paper Co., Philadelphia, Pa.—Insert 104-105
Menasha Products Co., Chicago, Ill.
Milwaukee Printing Co., Milwaukee, Wis.
Nashua Gummed & Coated Paper Co., Nashua, N. H.
Newark Glassine Bag Co., Newark, N. J.
Rhinelander Paper Co., Rhinelander, Wis.
Royal Co., Thomas M., Philadelphia, Pa.
Shamut Waxed Paper Co., Holliston, Mass.
Transparent Paper Printing Co., New York, N. Y.
Union Bag & Paper Co., New York, N. Y.
Warren Mfg. Co., New York, N. Y.—128-129
Westfield River Paper Co., Russell, Mass.—Facing Page 130

BALE TIES

Acme Steel Co., Chicago, Ill.—62
American Manufacturing Co., Brooklyn, N. Y.
American Steel & Wire Co., Chicago, Ill.
Crawfordsville Wire & Nail Co., Crawfordsville, Ind.
Des Moines Bale Tie Co., Des Moines, Ia.
Gerrard Co., Inc., Chicago, Ill.—92
Grammes, L. F., & Sons, Allentown, Pa.
Kokomo Bale Tie Co., Kokomo, Ind.
Nichols Wire & Sheet Co., Kansas City, Mo.
Roeblings, John, & Sons Co., Trenton, N. J.
Shelby Wire Co., Shelby, O.
Signode Steel Strapping Co., Chicago, Ill.—120
Stanley Works, New Britain, Conn.
C. W. Tennant & Sons, Inc., New York, N. Y.
Union Steel & Wire Co., Indianapolis, Ind.

BALING, PRESSES

Davenport Mfg. Co., Davenport, Ia.
Galland-Henning Co., Milwaukee, Wis.
Logemann Brothers Co., Milwaukee, Wis.
Trojan Mfg. Co., Grand Rapids, Mich.

BARREL HEAD LINERS

Angier Corp., Framingham, Mass.
Consolidated Paper Co., Monroe, Mich.—85
Edgewater Paper Co., Menasha, Wis.
Fort Orange Paper Co., Castleton-On-Hudson, N. Y.—Insert 92-93
Hinde & Dauche Paper Co., Sandusky, O.
Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.—101
Nashua Gummed and Coated Paper Co., Nashua, N. H.
Paterson Parchment Paper Co., Passaic, N. J.—112
Rexford Paper Co., Milwaukee, Wis.
Safepack Mills, Millis, Mass.
West Carrallton Parchment Co., West Carrallton, O.

BARRELS, SLACK

Farmers Mfg. Co., Norfolk, Va.
Fessenden Companies, Inc., Townsend, Mass.
Greif Bros. Cooperage Co., Cleveland, O.
K. W. Jacobs Cooperage Co., Milwaukee, Wis.
Mancuso Cooperage Co., Inc., Kenner, La.
Sandusky Cooperage & Lumber Co., St. Louis, Mo.
St. Louis Cooperage Co., St. Louis, Mo.
The Virginia Barrel Co., Winchester, Va.
Western Cooperage Co., Portland, Ore.

BARRELS (Steel)

Atlas Steel Barrel Corp., New York, N. Y.
Cleveland Steel Barrel Co., Cleveland, O.
Detroit Range Boiler and Steel Barrel Co., Detroit, Mich.
Draper Mfg. Co., Cleveland, O.
Hydraulic Pressed Steel Co., Cleveland, O.
Knapp Metal Barrel Co., San Francisco, Cal.
Mahoning Steel Products Co., Warren, O.
National Enameling & Stamping Co., New York, N. Y.
National Steel Barrel Co., Cleveland, O.
Ohio Corrugating Co., Warren, O.
Petroleum Iron Works Co., Sharon, O.
Toledo Steel Barrel Co., Toledo, O.

BARRELS, TIGHT

Atlantic Tank & Barrel Corp., North Bergen, N. J.
Fessenden Companies, Inc., Townsend, Mass.
C. G. Hopkins Cooperage Co., Joplin, Mo.
K. W. Jacobs Cooperage Co., Milwaukee, Wis.
National Cooperage & Woodenware Co., Peoria, Ill.
Northern Cooperage Co., St. Paul, Minn.
Pekin Cooperage Co., Pekin, Ill.
Sandusky Cooperage & Lumber Co., St. Louis, Mo.
St. Louis Cooperage Co., St. Louis, Mo.
B. C. Sheahan Co., Chicago, Ill.
Western Cooperage Co., Portland, Ore.

BASKETS, DELIVERY

A. Backus, Jr., & Sons, Detroit, Mich.
Fibopak Co., Chicago, Ill.
Gereke-Allen Carton Co., St. Louis, Mo.
Lewis Co., Inc., G. B., Watertown, Wis.

BILLS OF LADING (Invoices, Shipping Forms, Etc.)

American Sales Book Co., Elmira, N. Y.
Egry Register Co., Dayton, O.
Gilman Fanfold Co., Niagara Falls, N. Y.
Milwaukee Printing Co., Milwaukee, Wis.
Specialty Paper Co., Dayton, O.
Standard Register Co., Dayton, O.

BOARD, OILED (Rolls and Sheets)

Bradley Stencil Machine Co., St. Louis, Mo.
Diagraph Stencil Machine Corp., St. Louis, Mo.
Marsh Stencil Machine Co., Belleville, Ill.

BOTTLES (Glass)

American Bottle Co., Toledo, O.
Atlantic Bottle Co., Brackenridge, Pa.
Capstan Glass Co., Connellsville, Pa.
Cunningham Glass Co., D. O., Pittsburgh, Pa.
Fairmont Glass Works, Indianapolis, Ind.
Hart Glass Mfg. Co., Dunkirk, Ind.
Hazel-Atlas Glass Co., Wheeling, W. Va.
Illinois Glass Co., Alton, Ill.
Maryland Glass Corp., Baltimore, Md.
Nivison-Weiskopf Co., Cincinnati, O.
Owens Bottle Co., Toledo, O.
Reed Glass Co., F. E., Rochester, N. Y.

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Root Glass Co., Terre Haute, Ind.
Swindell Bros., Baltimore, Md.
Turner Glass Co., Terre Haute, Ind.
Tygart Valley Glass Co., Washington, Pa.
Wheaton, T. C., Millville N. J.

BOX BOARD (Clay Coated)

American Coating Mills, Elkhart, Ind.—64
Gair Co., Robert, New York, N. Y.
Lowe Paper Co., Ridgefield, N. J.
National Folding Box Co., New Haven, Conn.
United Paperboard Co., Inc., New York, N. Y.
Wabash Coating Mills, Wabash, Ind.

BOX BOARD (Folding)

Alton Box Board & Paper Co., Alton, Ill.
American Coating Mills, Elkhart, Ind.—64
Bermingham & Prosser Co., Kalamazoo, Mich.
Cherry River Paper Co., Philadelphia, Pa.
Consolidated Paper Co., Monroe, Mich.—85
Federal Paperboard Co., Bogota, N. J.
Fort Orange Paper Co., Castleton-On-Hudson, N. Y.—Insert 92-93
Gair Co., Robert, New York, N. Y.
Gardner & Harvey Co., Middletown, O.
Lawless Bros. Paper Mills, East Rochester, N. Y.
La Boiteaux Co., The, Cincinnati, O.
Lowe Paper Co., Ridgefield, N. J.
Mac Sim Bar Paper Co., Otsego, Mich.
Marathon Paper Mills, Rothschild, Wis.
Michigan Carton Co., Battle Creek, Mich.
National Folding Box Co., New Haven, Conn.
Ohio Boxboard Co., Rittman, O.
Richardson Co., Lockland, O.
Robertson Paper Co., Montville, Conn.
Republic Paperboard Co., Cincinnati, O.
Schmidt & Ault Paper Co., York, Pa.
Sutherland Paper Co., Kalamazoo, Mich.—125
United Paperboard Co., Inc., New York, N. Y.

BOX BOARD (Set-Up)

Alton Box Board & Paper Co., Alton, Ill.
American Coating Mills, Elkhard, Ind.—64
Butterfield-Barry Co., New York, N. Y.—82
Cherry River Paper Co., Philadelphia, Pa.
Container Corp. of America, Philadelphia, Pa.
Continental Paper Co., Bogota, N. J.
Downington Paper Co., Downington, Pa.
Franklin Board & Paper Co., Franklin, O.
La Boiteaux Co., Cincinnati, O.
Lawless Bros. Paper Mills, East Rochester, N. Y.
McEwan & Sons, R. B., Whippany, N. J.
Mac Sim Bar Paper Co., Otsego, Mich.
Ravenswood Paper Mills, Long Island City, N. Y.
Republic Paperboard Co., Cincinnati, O.
Sutherland Paper Co., Kalamazoo, Mich.—125
United Paperboard Co., Inc., New York, N. Y.

BOXES (Display)

American Can Co., New York, N. Y.
Atlantic Carton Corp., Norwich, Conn.
Badger Carton Co., Milwaukee, Wis.
Brooks Bank Note Co., Springfield, Mass.—78-79
Brown & Bailey Co., Philadelphia, Pa.—Insert 80-81
Burt Co., Ltd., F. N., Buffalo, N. Y.—Insert 82-83
Climax Paper Box Co., No. Cambridge, Mass.
Consolidated Paper Co., Monroe, Mich.—85
Continental Folding Paper Box Co., Ridgefield, N. J.
Danbury Square Box Co., Danbury, Conn.
Fort Orange Paper Co., Castleton-On-Hudson, N. Y.—Insert 92-93
Gair Co., Robert, New York, N. Y.
Gardner & Harvey Co., Middletown, O.
Gereke-Allen Carton Co., St. Louis, Mo.
International Folding Paper Box Co., North Bergen, N. J.
Interstate Folding Box Co., Middletown, O.
Lord Baltimore Press, Baltimore, Md.
Mason Box Co., Attleboro Falls, Mass.
Michigan Carton Co., Battle Creek, Mich.
Milwaukee Paper Box Co., Milwaukee, Wis.
Milwaukee Printing Co., Milwaukee, Wis.
Molitor Box Co., Milwaukee, Wis.
Morris Paper Mills, Chicago, Ill
National Folding Box Co., New Haven, Conn
National Metal Edge Box Co., Philadelphia, Pa.
Randolph Box & Label Co., Chicago, Ill.
Reynolds Metal Co., Louisville, Ky.—Insert 116-117
Richardson Co., Lockland, O.
Ritchie & Co., W. C., Chicago, Ill.—Insert 118-119
Rochester Folding Box Co., Rochester, N. Y. —117
Rowell Co., Inc., E. N., Batavia, N. Y.—Insert 120-121
Sefton Manufacturing Co., Chicago, Ill.
Sutherland Paper Co., Kalamazoo, Mich.—125
U. S. Printing & Litho. Co., Norwood, O.
Van Box & Board Co., New York, N. Y.
Wayne Paper Goods Co., Ft. Wayne, Ind.

BOXES (Folding Cartons)

Ackerman-Quigley Co., Chicago, Ill.
Addison Lithograph Co., Rochester, N. Y.
Akron Paper Box Co., Akron, O.
Alderman-Fairchild Co., Rochester, N. Y.
Allentown Paper Box Co., Allentown, Pa.
American Carton Corp., Brooklyn, N. Y.
American Carton Co., San Francisco, Cal.
American Carton Corp., Chicago, Ill.
American Folding Box Co., St. Louis, Mo.
American Paper Box Co., Grand Rapids, Mich.
American Paper Box & Board Co., Hastings, Mich.
Andrews, O. B., Company, Chattanooga, Tenn.
Atlantic Carton Corp., Norwich, Conn.
Baltimore Paper Box Co., Baltimore, Md.
Badger Carton Corp., Milwaukee, Wis.
Boxboard Products Co., San Francisco, Cal.
Brooks Bank Note Co., Springfield, Mass.—78-79
Brown & Bailey Co., Philadelphia, Pa.—Insert 80-81
Calvert Lithographing Co., Detroit, Mich.
Central Paper Box Co., Kansas City, Mo.
Climax Mfg. Co., Castorland, N. Y.
Coast Carton Co., Seattle, Wash.
Columbia Paper Box Co., Portland, Ore.
Consolidated Paper Co., The, Monroe, Mich. —85
Continental Folding Paper Box Co., Ridgefield, N. J.
Continental Paper Products Co., Denver, Col.
Danbury Square Box Co., The, Danbury, Conn.
Dayton Folding Box Co., Cincinnati, O.
Densen Carton Co., Inc., Ridgefield Park, N. J.
Eureka Paper Box Co., Los Angeles, Cal.
Excelsior Paper Box Co., St. Louis, Mo.
Fisher Paper Box Co., Minneapolis, Minn.
Forbes Lithograph Mfg. Co., Boston, Mass.
Forsyth Folding Box Co., Winston-Salem, N. C.
Fort Orange Paper Co., Castleton-On-Hudson, N. Y.—Insert 92-93
Fort Wayne Box Co., Fort Wayne, Ind.
Gardner & Harvey Co., Middletown, O.
Gebhardt Folding Box Co., Dayton, O.
Gereke-Allen Carton Co., St. Louis, Mo.
Gilman Carton Co., San Francisco, Cal.
Grand Rapids Paper Box Co., Grand Rapids, Mich.
Great Lakes Paper Box Co., Cleveland, O.
Guilford Folding Box Co., Baltimore, Md.
Hatch & Co., C. F., Lowell, Mass.
Heywood Mfg. Co., Minneapolis, Minn.
Howell & Co., F. M., Elmira, N. Y.
Hummel & Downing Co., Milwaukee, Wis.
Illinois Carton Corp., Chicago, Ill.
Illinois Paper Box Co., Chicago, Ill.
International Printing Co. of Indiana, Indianapolis, Ind.
Interstate Folding Box Co., Middletown, O
Karle Lithograph Co., Rochester, N. Y.
Kehm, Fletsch & Miller Co., The, Chicago, Ill.
Kratz, A. S., Co., Inc., The, Richmond, Va.
Lebanon Paper Box Co., The Lebanon, Pa.
Lititz Paper Box & Printing Co., Lititz, Pa.
Lord Baltimore Press, Baltimore, Md.
Marion Paper Box Co., Marion, Ind.
Memphis Folding Box Co., Memphis, Tenn.
Menasha Products Co., Chicago, Ill.
Michigan Carton Co., Battle Creek, Mich.
Milwaukee Paper Box Co., Milwaukee, Wis.
Molitor Box Co., Milwaukee, Wis.
Morris Paper Mills, Morris, Ill.
Muirson Label & Carton Co., Brooklyn, N. Y.
Myers, Inc., J. & P. B., Brooklyn, N. Y.
National Carton Co., Joliet, Ill.
National Folding Box Co., New Haven, Conn.
National Metal Edge Box Co., Philadelphia, Pa.
National Paper Box Co., Kansas City, Mo.
National Paper Products Co., Los Angeles, Cal.
Nelson Mfg. Co., The B. F., Minneapolis, Minn.
Nevins-Church Press, New York City
Newport Carton Co., Newport, R. I.
Oakland Folding Paper Box Co., Oakland, Cal.
Ohio Box Board Co., Rittman, O.
Pacific Label & Carton Co., Seattle, Wash
Paper Package Company, Indianapolis, Ind
Paper Products Company, Pocatello, Idaho
Paraffine Companies, Inc., The San Francisco, Cal.
Quaker City Folding Box Co., The, Camden, N. J.
Randolph Box & Label Co., Chicago, Ill.
Reynolds Metal Co., Louisville, Ky.—Insert 116-117
Richardson-Taylor Printing Co., Cincinnati, Ohio
Richardson Co., The, Lockland, Cincinnati, O.
Robertson Paper Co., Montville, Conn.
Rochester Folding Box Co., The, Rochester, N. Y.—117
Russell & Co., H. M., Chelsea, Mass.
Schmidt Litho. Co., San Francisco, Cal.
Schmidt Litho. Co., Theo. A., Chicago, Ill.—119
Schultz Folding Box Co., St. Louis, Mo.
Schulz Co., Inc., A. Geo., Milwaukee, Wis.
Sefton Manufacturing Corp., Chicago, Ill.
Self-Locking Carton Corp., Chicago, Ill.
Spitzer Paper Box Co., The Toledo, O.
Standard Carton Co., Tacoma, Wash.
Standard Paper Box Co., Detroit, Mich.
Stecher Litho. Co., Rochester, N. Y.
Stecker Paper Box Co., Detroit, Mich.
Sutherland Paper Co., Kalamazoo, Mich.—125
Trenton Folding Box Co., Trenton, N. J.
Universal Paper Box Co., St. Louis, Mo.
U. S. Printing & Lithographing Co., The, Norwood, Cincinnati, O.
Utah Paper Box Co., Salt Lake City, Utah
Van Box & Board Co., New York, N. Y.
Wagner Folding Box Co., Buffalo, N. Y.
Waldorf Paper Products Co., St. Paul, Minn.
Wayne Paper Goods Co., Fort Wayne, Ind.
Western Paper Products Co., Salt Lake City, Utah
Wilson Paper Box Co., Richmond, Va.
Wolverine Carton Company, Grand Rapids, Mich.
Worcester Paper Box Co., Medford, Mass.

BOXES (Corrugated, Solid Fibre)

Agar Manufacturing Corp., Whippany, N. J.
Ajax Corrugated Paper Co., St. Louis, Mo.
American Can Co., New York, N. Y.
American Corrugated Paper Products Corp., New York, N. Y.
American Corrugating Co., Grand Rapids, Mich.
American Fibre Package Co., Grand Rapids, Mich.
Andrews Co., O. B., Chattanooga, Tenn.
Arch-Bilt Box Corp., Brooklyn, N. Y.
Ashtabula Corrugated Box Co., The Ashtabula, O.
Atlantic Container Products Corp., Watertown, N. Y.
Atlas Box Co., Chicago, Ill.
Baltimore Paper Box Co., Baltimore, Md.
Bird & Son, Inc., East Walpole, Mass.
Bliss, H. R., Co., Inc., Niagara Falls, N. Y.—73-76
Bogota Paper & Board Co., Bogota, N. J.
Brack Container Corp., Rochester, N. Y.
Brooklyn Fibre Syndicate, Inc., Brooklyn, N. Y.
Buffalo Corrugated Container Co., Buffalo, N. Y.
City Corrugated Paper Products Co., Inc., New York, N. Y.
Consolidated Paper Co., The, Monroe, Mich. —85
Container Corp. of America, Chicago, Ill.
Corning Fibre Box Corp., The, Corning, N. Y.
Corrugated Container Co., Philadelphia, Pa.
Corrugated Container Corp., Columbus, O.
Crescent Box Corp., Philadelphia, Pa.
Densen Corrugated Paper Co., Ridgefield Park, N. J.
Detroit Corrugated Box Co., Detroit, Mich.
Downing Box Co., Milwaukee, Wis.
Eastern Box Co., Baltimore, Md.
Eggers-O'Flying Co., Omaha, Neb.
Evans Fibre Box Co., Chicago, Ill.
Fairmont Box Co., Fairmont, W. Va.
Federal Container Co., Philadelphia, Pa.
Fiber Board Container Co., Richmond, Va.
Fort Wayne Corrugated Paper Co., Fort Wayne, Ind.
Gair Co., Robert, New York, N. Y.
Gaylord, Inc., Robert, St. Louis, Mo.
General Fibre Box Co., Springfield, Mass.
Gibraltar Corrugated Paper Co., Inc., North Bergen, N. J.
Hercules Paper Box Co., Columbus, O.
Hinde & Dauch Paper Co., The Sandusky, O.
Hummell & Downing Co., Milwaukee, Wis.
Hunt-Crawford Corp., Coshocton, O.
Hygrade Corrugated Paper Products Co., Long Island City, N. Y.
Ideal Corrugated Box Co., Parkersburg, W. Va.

XUM

Buyers' Directory of the Packaging Industries

For information concerning equipment listed below, see catalog pages indicated by numbers appearing after advertisers' listing

Illinois Glass Co., Alton, Ill.
Indiana Fibre Products Co., Marion, Ind.
Inland Box Corporation, Indianapolis, Ind.
Jackson Box Co., The Cincinnati, O.
Kansas City Fibre Box Co., Kansas City, Mo.
Kieckhefer Container Corp., Milwaukee, Wis.
Kress Box Co., F. J., Pittsburgh, Pa.
Mengel Company, Louisville, Ky.
Menasha Woodenware Co., Menasha, Wis.
Mid-West Box Co., Chicago, Ill.
Missouri Fibre Package Co., St. Louis, Mo.
Monroe Paper Products Co., Monroe, Mich.
National Paper Box Co., Kansas City, Kan.
Nelson Mfg. Co., The B. T., Minneapolis, Minn.
New Orleans Corrugated Box Co., Inc., New Orleans, La.
Nivison-Weiskopf Co., The, Cincinnati, O.
Ohio Boxboard Co., Cleveland, O.
Oshkosh Corrugated Box Mfg. Co., Oshkosh, Wis.
Ottawa River Paper Co., Toledo, O.
Pa Pro Co., The, Glenfield, N. Y.
Paraffine Companies, The, Inc., San Francisco, Cal.
Pequot Mfg. Corp., Glendale, L. I., N. Y.
Richardson Co., The, Lockland, O.
Richmond Corrugated Paper Co., Richmond, Va.
River Raisin Paper Co., Monroe, Mich.
Rochester Folding Box Co., The, Rochester, N. Y.—117
Rockford Fibre Container Co., Rockford, Ill.
Scharff-Koken Mfg. Co., St. Louis, Mo.
Schinzel Manufacturing Corp., Long Island City, N. Y.
Schmidt Lithograph Co., San Francisco, Cal.
Schultz Co., A. Geo., Chicago, Ill.
Sefton Mfg. Corporation, Chicago, Ill.
Standard Corrugated Box Co., St. Louis, Mo.
Star Corrugated Box Co., Maspeth, L. I., N. Y.
Texas Corrugated Box Co., Dallas, Texas
U. S. Corrugated Fibre Box Co., Indianapolis, Ind.
Wabash Fibre Box Co., Terre Haute, Ind.
Waldorf Paper Products Co., St. Paul, Minn.
Weber & Co., David, Philadelphia, Pa.

BOXES (Mailing)

Brooks Bank Note Co.—78-79
Brown & Bailey, Philadelphia, Pa.—Insert 80-81
Atlantic Carton Corp., Norwich, Conn.
Consolidated Paper Co., Monroe, Mich.—85
Fort Orange Paper Co., Castleton-On-Hudson, N. Y.—Insert 92-93
Gair Co., Robert, New York, N. Y.
Gaylord, Inc., Robert, St. Louis, Mo.
Gereke-Allen Carton Co., St. Louis, Mo.
Hercules Paper Box Co., Columbus, O.
Hinde & Dauch Paper Co., The, Sandusky, O.
Illinois Carton & Label Co., Alton, Ill.
Interstate Folding Box Co., Middletown, O.
Lord Baltimore Press, Baltimore, Md.
Mason Box Co., The, Attleboro Falls, Mass.
Michigan Carton Co., Battle Creek, Mich.
National Folding Box Co., New Haven, Conn.
National Metal Edge Box Co., Philadelphia, Pa.
New England Box Co., The, Greenfield, Mass.
River Raisin Paper Co., Monroe, Mich.
Ritchie & Co., W. C., Chicago, Ill.—Insert 118-119
Rochester Folding Box Co., Rochester, N. Y. —117
Sefton Mfg. Co., Chicago, Ill.
Schultz Co., A. Geo., Milwaukee, Wis.
Trenton Folding Box Co., Trenton, N. J.
Wayne Paper Goods Co., Fort Wayne, Ind.

BOXES (Paper, Set-Up)

Letters indicate general class of boxes manufactured.
A—Covering Machine-made Boxes.
B—Automatic Machine-Made Boxes.
C—Hand-made Boxes.
D—Hand-made and Machine-made Boxes.
g. l.—Indicates manufacture of general line of boxes in the class specified, except certain types which are specialties or specialized in, such as Candy, Holiday, Face Powder, Perfumery, Carbon Paper, Jewelry, Pill and Drug, Round and Oval Hat, File Cases and Shelf Boxes, Hinged Lid and Display, Slide Boxes, Cigarette Boxes, Mailing Boxes and special small boxes. These are indicated by name.

Alderman-Fairchild Co., Rochester, N. Y.
A, B, C and D. candy, holiday, face powder, perfumery, hinged lid and display.

American Paper Box Co., Saginaw, Mich.
A, C and D g. l.
American Tri-State Paper Box Co., Nashville, Tenn.
A, B, C and D
Atlas Paper Box Co., Chattanooga, Tenn.
A and B g. l.
Barger Brothers, Elkhart, Ind.
A and C g. l.
Bauer & Co., J. J., Chicago, Ill.
A, B and D g. l.
Baxter Paper Box Co., The, Brunswick, Me.
D, face powder, perfumery, jewelry, pill and drug.
Bingham Paper Box Co., The, New London, Conn.
A, C and D g. l.
Bisler, Inc., G. A., Philadelphia, Pa.
A, B, C and D, candy and holiday.
Box Craft Co., The, Boston, Mass.
A, C and D g. l.
Bristol Paper Box Co., Bristol, Va.
A g. l.
Buffington Co., Providence, R. I.
A g. l.
Burt Co., Ltd., F. N., Buffalo, N. Y.—Insert 82-83
A, B, C and D, face powder, perfumery, pill and drug, slide boxes, cigarette boxes.
Cadby & Son, Inc., Albany, N. Y.
A, B, C and D g. l.
Cambridge Paper Box Co., Cambridge, Mass.
A, B, C, D g. l.
Carolina Paper Box Co., The, Winston-Salem, N. C.
A and B g. l.
Casco Paper Box Co., Portland, Me.
A, B and C g. l.
Casselman, Inc., T. and E., New York, N. Y.
A, B, C and D g. l.
Climax Paper Box Co., Cambridge, Mass.
B, C and D g. l.
Congress Paper Box Co., Chicago, Ill.
A, B, C and D g. l.
Consolidated Paper Box Co., Richmond, Va.
A, B, C and D g. l.
Cumberland Valley Paper Box Co., Hagerstown, Md.
A and D g. l.
Danbury Square Box Co., The Danbury, Conn.
A, C and D g. l.
Davenport Paper Box Co., Cincinnati, O.
A, B, C and D g. l.
Dennison Mfg. Co., Framingham, Mass.
D.
Des Moines Box Co., Des Moines, Ia.
A, B, C and D g. l.
Doolittle Co., The E. J., Meriden, Conn.
A, C and D g. l.
Drake & Sons, Inc., H. R., Palmyra, N. Y.
A and B g. l.
Duluth Paper Box Co., Duluth, Minn.
A, B, C and D.
Eagle Paper Box Co., Detroit, Mich.
A, C and D g. l.
Eggerss-O'Flyng Co., Omaha, Neb.
A, B, C and D g.l.
Empire Printing and Box Co., Atlanta, Ga.
A, B, C and D g. l.
Enterprise Paper Box Co., San Francisco, Cal.
A, B, C and D g. l.
Evansville Mfg. Co., Evansville, Ind.
A and D g. l.
Excelsior Paper Box Factory, St. Louis, Mo.
A, B, C and D g. l.
Faust Paper Co., Oshkosh, Wis.
A, B, C and D g. l.
Fisher Paper Box Co., Inc., Minneapolis, Minn.
A, B, C and D g. l.
Fort Wayne Paper Box Co., Fort Wayne, Ind.
A, C and D g. l.
Freeport Paper Box Co., Freeport, Ill.
A, C and D.
French & Co., A. F., Lowell, Mass.
A, B, C and D g. l.
Globe Paper Box Co., Chicago, Ill.
A, C and D g. l.
Grand Rapids Paper Box Co., Grand Rapids, Mich.
A, B, C and D g. l.
Great Western Paper Box Co., St. Louis, Mo.
A, B, C and D g. l.
Harrisburg Paper Box Co., Harrisburg, Pa.
A, B, C and D g. l.
Hartford Box Co., The, Hartford, Conn.
A and C g. l.

Hatch Co., C. F., Lowell, Mass.
A, B, C, D and g.l.
Henry Co., Ira L., Watertown, Wis.
A, C, D and g. l.
Hollywood Paper Box Corp., Hollywood, Cal.
A, B and D g. l.
Holman Paper Box Co., St. Louis, Mo.
A, B, C and D g. l.
Howell & Co., F. M., Elmira, N. Y.
A, B, D and g. l.
Illinois Paper Box Co., Chicago, Ill.
A, C and D g. l.
Inland Paper Box Co., Denver, Colo.
B, C and D g. l.
Jones Paper Box Co., Jesse, Philadelphia, Pa.
A, B, C and D g. l.
Kalamazoo Paper Box Co., Kalamazoo, Mich.
A, B, C and D g. l.
Kentucky Paper Box Co., Inc., Louisville, Ky.
A, B, C and D g. l.
Kerker Paper Box Co., Davenport, Ia.
A and B g. l.
Keystone Box Co., Pittsburgh, Pa.
A, B, C and D g. l.
Keyston Containers, Inc., Reading, Pa.
A, B and D g. l.
Killian Co., George P., Washington, D. C.
A, B, C and D g. l.
Knoxville Paper Box Co., Knoxville, Tenn.
A, B, C and D g. l.
Kroeck Paper Box Co., Chicago, Ill.
A g. l.
Lee Paper Box Co., Philadelphia, Pa.
A, B, C and D g. l.
Leggett & Son, Inc., John, Troy, N. Y.
A and D g. l.
Lengsfield Brothers, New Orleans, La.
A, B, C and D g. l.
Lorscheider Schang Co., Rochester, N. Y.
A, B, C and D g. l.
Magnolia Paper Co., Houston, Texas
A, C and D g. l.
Mason Box Co., The, Attleboro Falls, Mass.
A, B, C and D g. l.
Michigan Paper Box Co., The, Detroit, Mich.
A and D g. l.
Miller Co., Walter P., Philadelphia, Pa.
A, B, C and D g. l.
Mills, Inc., H. J., Bristol, Conn.
A, B and D g. l.
Milwaukee Paper Box Co., Milwaukee, Wis.
A, B, C and D g. l.
Missouri Paper Products Co., St. Joseph, Mo.
A, B, C and D g. l.
Molitor Box Co., Milwaukee, Wis.
g. l.
Morse-Brackett Box Co., Boston, Mass.
A, C and D g. l.
Mullery Paper Box Co., St. Paul, Minn.
g. l.
Nashua Paper Box Co., Nashua, N. H.
A, C and D g. l.
National Metal Edge Box Co., Philadelphia, Pa.
A, C and D g. l.
Neumann Co., The Robert, Cincinnati, O.
A, C and D g. l.
Newark Paper Box Co., Newark, N. J.
A, B, C and D g. l.
Norristown Box Co., Norristown, Pa.
A and B g. l.
Northwestern Paper Box Co., Seattle, Wash.
A, B, C and D g. l.
Ohio Boxboard Co., Cleveland, O.
A, B, C and D g. l.
Paper Package Co., Indianapolis, Ind.
A, B, C and D g. l.
Pearson Paper Box Co., Kansas City, Mo.
A, C and D g. l.
Pharmacy Paper Box Co., Chicago, Ill.
A, B and C.
Pictorial Paper Package Co., Aurora, Ill.
A, B, C and D g. l.
Pioneer Paper Box Co., Oklahoma City, Okla.
B and C, candy.
Quincy Paper Box Co., Quincy, Ill.
A, C and D g. l.
Randolph Paper Box Co., Richmond, Va.
A, B and D g. l.
Revere Paper Box Co., Boston, Mass.
A and C, candy.
Rhoades Paper Box Co., Springfield, O.
A, C and D g. l.
Ritchie & Co., W. C., Chicago, Ill.—Insert 118-119
A, B, C and D g. l., candy, holiday, face powder, perfumery, jewelry, pill and drug, slide boxes, cigarette boxes, mailing boxes, hinged lid and display, special small boxes, mailing tubes, paper cans with paper or metal ends, liquid tight round containers.

Buyers' Directory of the Packaging Industries

For information concerning equipment listed below, see catalog pages indicated by numbers appearing after advertisers' listing

Rowell Co., Inc., E. N., Batavia, N. Y.—Insert 120-121
A, B and D g. l.
Royal Paper Box Co., Boston, Mass.
A, B, C and D.
Saginaw Paper Box Co., Saginaw, Mich.
A, B, C and D.
St. Louis Paper Box Co., St. Louis, Mo.
A, B, C and D.
Schleicher Paper Box Co., F. J., St. Louis, Mo.
B, C and D, candy.
Schoettle Co., Edwin J., Philadelphia, Pa.
A, B, C and D g. l.
Schultz & Co., H., Chicago, Ill.
A, B, C and D g. l.
Shoup Co., The A. D., Brooklyn, N. Y.
B, candy, holiday, face powder, perfumery, display.
Shoup Co., A. D., Chicago, Ill.
A, C and D g. l.
Spitzer Paper Box Co., Toledo, O.
A, B, C and D g. l.
Standard Paper Box Corp., Pawtucket, R. I.
A and B, jewelry.
Standard Paper Box Co., Seattle, Wash.
A, B, C and D g. l.
Stecker Paper Box Co., Detroit, Mich.
A, B, C and D g. l.
Taylor & Co., Inc., Charles J., Baltimore, Md.
A, C and D g. l.
Trum, Inc., E. J., Brooklyn, N. Y.
A and D g. l.
United Box and Paper Co., Holyoke, Mass.
A, B and D, papeterie and carbon paper.
Utah Paper Box Co., Salt Lake City, Utah
A, C and D g. l.
Voss Corp., Karl, Hoboken, N. J.
Waldeck & Co., Jersey City, N. J.
A, C and D g. l.
Western Paper Box Co., Oakland, Cal.
A, C and D g. l.
Western Paper Products Co., Salt Lake City, Utah
A, B, C and D g. l.
Wilmington Paper Box Co., Wilmington, Del.
A and B g. l.
Yard Box Co., William F., Trenton, N. J.
A, B, C and D g. l.
Cork Paper Box Co., York, Pa.
A, B, C and D g. l.

BOX MAKING MACHINES

Grammes & Sons, L. F., Allentown, Pa.
Inman Mfg. Co., Inc., Amsterdam, N. Y.
National Packaging Machinery Co., Boston, Mass.—106-109
Pneumatic Scale Corp., Ltd., Norfolk Downs, Mass.—115-116
Staude Mfg. Co., E. G., St. Paul, Minn.
Swift, Jr., Geo. W., Inc., Bordentown, N. J.

BOX NAILING MACHINES

Doig, Inc., Wm. S., Brooklyn, N. Y.
Grammes & Sons, Inc., L. F., Allentown, Pa.
Morgan Machine Co., Inc., Rochester, N. Y.

BOX PRINTING MACHINES

Hooper Co., F. H., Glenarm, Md.
Knowlton Co., M. D., Rochester, N. Y.
Langston Co., Samuel M., Camden, N. J.
Morgan Machine Co., Inc., Rochester, N. Y.
New Jersey Machine Corp., Hoboken, N. J.

BOX REINFORCEMENT (Strapping-Wire)

Acme Steel Co., Chicago, Ill.—62
American Steel & Wire Co., Chicago, Ill.
Gerrard Co., Inc., Chicago, Ill.—92
Parker Machine Works, Riverside, Cal.
Seneca Wire & Mfg. Co., Fostoria, O.
Signode Steel Strapping Co., Chicago, Ill.—120
Stanley Works, New Britain, Conn.
Tennant Sons & Co., C., New York, N. Y.

BOX SEALING MACHINES (Adhesive)

Bliss Co., Inc., H. R., Niagara Falls, N. Y.—73-76
Cartoning Machinery Corp., Newport, R. I.—83
Ferguson Co., J. L., Joliet, Ill.—88-90
Johnson Automatic Sealer Co., Ltd., Battle Creek, Mich.—97-100
Jones, James H., Chicago, Ill.
National Packaging Machinery Co., Boston, Mass.—106-109
Pneumatic Scale Corp., Norfolk Downs, Mass.—115-116
Standard Sealing Equipment Corp., Long Island City, N. Y.—123
Stokes & Smith Co., Philadelphia, Pa.—124

BOX SEALING MACHINES (Wire)

Acme Steel Co., Chicago, Ill.—62
Bliss Co., Inc., H. R., Niagara Falls, N. Y.—73-76
Gerrard Co., Inc., Chicago, Ill.—92
Jones, James H., Chicago, Ill.
Latham Machinery Co., Chicago, Ill.—102-103
New Jersey Wire Stitching Co., Camden, N. J.
Parker Machine Works, Riverside, Cal.
Signode Steel Strapping Co., Chicago, Ill.—120
Stanley Works, New Britain, Conn.
Tennant Sons & Co., C., New York, N. Y.

BOX SHOOKS (Wooden Boxes)

Acme Box Co., Chicago, Ill.
Anderson-Tully Co., Memphis, Tenn.
Chicago Mill & Lumber Co., Chicago, Ill.
Dodge & Bliss Co., Jersey City, N. J.
Dunning Corp., J. H., New York, N. Y.
General Box Co., Chicago, Ill.
National Box Co., Chicago, Ill.
New England Box Co., The, Greenfield, Mass.
Osgood & Blodgett Mfg. Co., St. Paul, Minn.
Paine Lumber Co., Ltd., Oshkosh, Wis.
Providence Box & Lbr. Co., Providence, R. I.
Queen City Box Co., Cincinnati, O.
Rathborne, Hair & Ridgway Co., Chicago, Ill.
Richards Shook Corp., New York, N. Y.
Star Box & Lumber Co., New York, N. Y.
St. Croix Box Mfg. Co., Bayport, Minn.
St. Croix Lumber Co., Boston, Mass.
Sterling Box Co., St. Louis, Mo.
Standard Packing Box Co., Philadelphia, Pa.
United Box Mfg. Co., Kansas City, Mo.
Wolverine Box Co., Detroit, Mich.
Wisconsin-Michigan Lumber Co., Eagle River, Wis.
Zenith Box & Lumber Co., Duluth, Minn.

BOX SHOOKS, VENEER AND PLYWOOD

Atlas Plywood Corp., Boston, Mass.
Chicago Mill & Lumber Co., Chicago, Ill.
General Box Co., Chicago, Ill.
Illinois Glass Co., Alton, Ill.
National Box Co., Chicago, Ill.
The New England Box Co., Greenfield, Mass.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Rathbone, Hair & Ridgway Co., Chicago, Ill.
St. Joseph Iron Works, St. Joseph, Mich.
Tifft Bros, New York, N. Y.

BOX TAPING MACHINES (Gummed)

Better Packages, Inc., Shelton, Conn.
Holyoke Paper Corp., New York, N. Y.
Metal Specialties Co., Chicago, Ill.
Nashua Package Sealing Co., Nashua, N. H.
Paper Utilities Corp., Chicago, Ill.
Potdevin Machine Co., Brooklyn, N. Y.

BOX WRAPS AND DRESSINGS

American Lithograph Co., New York, N. Y.
American Tissue Mills, Holyoke, Mass.—63
Bendix Paper Co., New York, N. Y.—Insert 72-73
Bondy-Hermann Co., Chicago, Ill.
Bradner Smith Co., Chicago, Ill.
CentralLithograph Co., Cleveland, O.
Collins Mfg. Co., A. M., Philadelphia, Pa.
Datz & Son, A. S., Philadelphia, Pa.
De Jonge & Co., Louis, New York, N. Y.—Insert 84-85
District of Columbia Mfg. Co., Washington, D. C.
Forsman Co., C. H., New York, N. Y.
Gugler Lithograph Co., Milwaukee, Wis.
Hampden Glazed Paper & Card Co., Holyoke, Mass.—93
Heywood Co., Inc., R. K., New York, N. Y.—Insert 94-95
Kaupp & Son, J. M., Philadelphia, Pa.
Kehlman Co., L., New York, N. Y.
Keller-Dorian Paper Co., New York, N. Y.
Krause, Inc., R. M., New York, N. Y.
Kupfer Bros. Co., New York, N. Y.
Lebam Papers, Chicago, Ill.
Liebs Co., L. A., New York, N. Y.
Marvellum Co., Holyoke, Mass.
Mathias & Freeman Paper Co., Philadelphia, Pa.—Insert 104-105
McLaurin-Jones Co., Brookfield, Mass.
Middlesex Products Co., Boston, Mass.
Nashua Gummed & Coated Paper Co., Nashua, N. H.
National Art Co., New York, N. Y.
Nelson & Co., Chicago, Ill.
N. Y. & N. E. Paper Co., Holyoke, Mass.
New England Card & Paper Co., Springfield, Mass.
Oberly & Newell Corp., New York, N. Y.
Orchard Paper Co., St. Louis, Mo.
Paper Service Co., Philadelphia, Pa.
Pinco Papers, Inc., Camden, N. J.—Insert 112-113
Reynolds Metal Co., Louisville, Ky.—Insert 116-117
Rowell Co., Inc., E. N., Batavia, N. Y.—Insert 120-121
Rusling Wood, M., New York, N. Y.
Schmidt Litho. Co., Theo. A., Chicago, Ill.—119
Springfield Glazed Paper Co., Springfield, Mass.
Tamm & Co., New York, N. Y.
Trautman, Bailey & Blampey, New York, N. Y.—Insert 100-101
Walther & Co., Brooklyn, N. Y.—Insert 124-125
Whiting Co., Inc., C. R., Newark, N. J.—Insert 122-123
Whiting-Patterson Co., Philadelphia, Pa.—Insert 114-115
Williams & Co., Inc., Chas. W., New York, N. Y.

BUNDLE TYING MACHINES

Acme Steel Co., Chicago, Ill.—62
Bunn Co., B. H., Chicago, Ill.—80
Gerrard Co., Inc., Chicago, Ill.—92
National Bundle Tyer Co., Blissfield, Mich.
Signode Steel Strapping Co., Chicago, Ill.—120
Stanley Works, New Britain, Conn.

CADDIES, MOISTURE PROOF AND GREASE PROOF CRACKER

Bliss Co., Inc., H. R., Niagara Falls, N. Y.—73-76
Consolidated Paper Co., Monroe, Mich.—85
Gair Co., Robert, New York, N. Y.
Gaylord Co., Robert, St. Louis, Mo.—117
River Raisin Paper Co., Monroe, Mich.
Rochester Folding Box Co., Rochester, N. Y.—117

CAN CAPPING MACHINES

American Can Co., New York, N. Y.
Anchor Cap & Closure Corp., Long Island City, N. Y.
Anderson, Inc., E. D., New York, N. Y.—65-66
Capem Machinery Corp., Buffalo, N. Y.
Continental Can Co., New York, N. Y.
Elgin Mfg Co., Elgin, Ill.
Ferguson Co., J. L., Joliet, Ill.—88-90
Kiefer Machine Co., Karl, Cincinnati, O.—104
Knowlton Co., M. D., Rochester, N. Y.
National Packaging Machinery Co., Boston, Mass—106-109
Phoenix-Hermetic Co., Chicago, Ill.
Pneumatic Scale Corp., Norfolk Downs, Mass.—115-116
Small Mfg. Co., C. T., St. Louis, Mo.
U. S. Bottlers' Machinery Co., Chicago, Ill.
Williams Sealing Corp., Decatur, Ill.

CANS (Fibre)

American Can Co., New York, N. Y.
Marathon Paper Mills Co., Rothschild, Wis.
Molitor Box Co., Milwaukee, Wis.
Mono Service Co., Newark, N. J.
National Paper Can Co., Milwaukee, Wis.
Paper Canister Co., Philadelphia, Pa.
R. C. Can Co., St. Louis, Mo.
Reynolds Metal Co., Louisville, Ky.—Insert 116-117
Ritchie & Co., W. C., Chicago, Ill.—Insert 118-119
Rowell & Co., Inc., E. N., Batavia, N. Y.—Insert 120-121
Sealright Co., Fulton, N. Y.
Sefton National Fibre Can Co., St. Louis, Mo.
Small Mfg. Co., C. T., St Louis, Mo.
Smith-Lewis Fibre Can Corp., Lowville, N. Y.
Tulip Cup Corp., New York, N. Y.

CANS (Tin, Plain and Decorated)

American Can Co., New York, N. Y.
Clark Mfg. Co., J. L., Rockford, Ill.
Columbia Can Co., St. Louis, Mo.
Continental Can Co., New York, N. Y.
Federal Can Co., Nashville, Tenn.
Heekin Can Co., Cincinnati, O.
Manhattan Can Co., Brooklyn, N. Y.
Manufacturers Can Co., Harrison, N. J.
Metal Package Corp., New York, N. Y.
Phoenix-Hermetic Co., Chicago, Ill.
Robertson Steel & Iron Co., W. F., Springfield, O.
Tin Decorating Co., Baltimore, Md.
Wilkes-Barre Can Co., Wilkes-Barre, Pa.

CAPS (Bottle and Jar)

Aluminum Co. of America, Pittsburgh, Pa.
American Metal Cap Co., Brooklyn, N. Y.
Anchor Cap & Closure Corp., Long Island City, N. Y.
Aridor Co., Chicago, Ill.
Crown Cork & Seal Co., Inc., Baltimore, Md.
Empire Metal Cup Co., Brooklyn, N. Y.

XUM

Buyers' Directory of the Packaging Industries

For information concerning equipment listed below, see catalog pages indicated by numbers appearing after advertisers' listing

Guttman & Co., Ferdinand, Brooklyn, N. Y.
Hazel-Atlas Glass Co., Wheeling, W. Va.
National Seal Co., Brooklyn, N. Y.
Phoenix-Hermetic Co., Chicago, Ill.
Sterling, A. J., New York, N. Y.
Tin Decorating Co., Baltimore, Md.
Vacuum Seal Co., Brooklyn, N. Y.
Williams Sealing Corp.,Decatur, Ill.

CARTON LINERS

Deerfield Glassine Co., Monroe Bridge, Mass.
Hartford City Paper Co., Hartford City, Ind. —94
Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.—101
Marathon Paper Mills, Rothschild, Wis.
Menasha Products Co., Chicago, Ill.
Midland Metal Co., Chicago, Ill.
Nashua Gummed & Coated Paper Co., Nashua, N. H.
Paterson Parchment Paper Co., Passaic, N. J. —112
Reynolds Metal Co., Louisville, Ky.—Insert 116-117
Rhinelander Paper Co., Rhinelander, Wis.
Sutherland Paper Co., Kalamazoo, Mich.—125
Warren Mfg. Co., New York, N. Y.—128-129
West Carrolton Parchment Co., West Carrolton, O.
Westfield River Paper Co., Russell, Mass.—Insert Facing 130

CARTON MAKING MACHINES

Anderson, Inc., E. D., New York, N. Y.—65-66
Ferguson Co., J. L., Joliet, Ill.—88-90
Hoepner Automatic Machine Co., Buffalo, N. Y.—95
Inman Mfg. Co., Amsterdam, N. Y.
Johnson Automatic Sealer Co., Battle Creek, Mich.—97-100
Jones, Inc., R. A., Covington, Ky.
Knowlton Co., M. D., Rochester, N. Y.
National Packaging Machinery Co., Boston, Mass.—106-109
New Jersey Machine Corp., Hoboken, N. J.
Peters Machinery Co., Chicago, Ill.—113
Pneumatic Scale Corp., Norfolk Downs, Mass. —115-116
Staude Mfg. Co., E. G., St. Paul, Minn.
Stokes & Smith Co., Philadelphia, Pa.—124

CARTONS (Paraffined)

Butler Paper Products Co., Toledo, O.
Fort Orange Paper Co., Castleton-On-Hudson, N. Y.—Insert 92-93
Gair Co., Robert, New York, N. Y.
Menasha Products Co., Chicago, Ill.
Michigar Carton Co., Battle Creek, Mich.
Morris Paper Mills, Chicago, Ill.
Sutherland Paper Co., Kalamazoo, Mich.—125

CARTONS
(See Boxes, Folding Paper)
CARTONS (Metal-Surfaced, Metal-Lined)
Reynolds Metal Co., Inc., Louisville, Ky.—Insert 116-117

CASE LINERS

Angier Corp., Framingham, Mass.
Brown Co., Portland, Me.
Edgewater Paper Co., Menasha, Wis.
Rexford Paper Co., Milwaukee, Wis.
Safepack Mills, Millis, Mass.
Sisalkraft Co., Chicago, Ill.

CASTERS, TRUCK

Bassick Co., Bridgeport, Conn.
Bond Foundry & Mach. Co., Manheim, Pa.
Divine Bros., Utica, N. Y.
Fairbanks Co., New York, N. Y.
Faultless Caster Co., Evansville, Ind.
Lansing Co., Lansing, Mich.
Metzgar Co., Grand Rapids, Mich.
Nutting Truck Co., Fairbault, Minn.
Sargent & Co., New Haven, Conn.
Service Caster & Truck Co., Albion, Mich.
Tucker & Dorsey Mfg. Co., Indianapolis, Ind.
Warren Mfg. Co., Springfield, Mass.
The H. Zering Mfg. Co., Cincinnati, O.

CELLOPHANE, Printed and Plain

Catty Co., H. D., New York, N. Y.
Du Pont Cellophane Co., New York, N. Y.—87
Milwaukee Printing Co., Milwaukee, Wis.
Shellmar Products Co., Chicago, Ill.
Transparent Paper Printing Co., New York, N. Y.

CELLULOID

Celluloid Corp., Newark, N. J.

CHIPBOARD

Butterfield-Barry Co., New York, N. Y.—82
Consolidated Paper Co., Monroe, N. Y.—85
Container Corp. of America, Chicago, Ill.
Gair Co., Robert, New York, N. Y.
Kieckhefer Container Corp., Milwaukee, Wis.
La Boiteaux Co., Cincinnati, O.
Richardson Co., Lockland, O.
River Raisin Paper Co., Monroe, Mich.
Sefton Mfg. Corp., Chicago, Ill.
United Paperboard Co., New York, N. Y.
Warren Mfg. Co., New York, N. Y.—128-129

CONVEYORS

Alvey-Ferguson Co., Cincinnati, Ohio
Chain Belt Co., Milwaukee, Wis.
Dodge Mfg. Co., Mishawaka, Ind.
Gifford-Wood Co., Hudson, N. Y.
Jeffrey Mfg. Co., Columbus, Ohio
Keifer Machine Co., The, Karl, Cincinnati, Ohio—104
Lamson Co., Syracuse, N. Y.
Link-Belt Co., Chicago, Ill.
Logan Co.,Louisville, Ky.
Mathews Conveyor Co., Ellwood City, Pa.
Standard Conveyor Co., N. St. Paul, Minn.
Webster Mfg. Co., Chicago, Ill.

CORKS

American Cork Co., Boston, Mass.
Armstrong Cork Co., Pittsburgh, Pa.
Illinois Glass Co., Alton, Ill.
International Cork Co., Brooklyn, N. Y.

CRANES, PORTABLE

Crescent Truck Co., Lebanon, Pa.
Elwell-Parker Electric Co., The, Cleveland, O.
Mechanical Handling Systems, Inc., Detroit, Mich.
Shephard Electric Crane & Hoist Co., Montour Falls, N. Y.

CREPE WADDING

Forest Fleece Co., Boston, Mass.
International Paper Co., New York, N. Y.
Kimberly Clark Co., Chicago, Ill.
Rochester Folding Box Co., Rochester, N. Y. —117

COUNTER DISPLAY

See
Display Containers, Lithographers and Boxes Folding.

DRUMS, FIBRE

Arvey Mfg. Co., Chicago, Ill.
Carpenter Container Corp., Brooklyn, N. Y.
Champion Container Co., Philadelphia, Pa.
Container Co., The, Van Wert, Ohio
Master Package Corp., Owen, Wis.

EMBOSSING MACHINES

Coughlin Mfg. Co., New York, N. Y.
Griffin Co., H. C., New York, N. Y.—91
Peerless Roll Leaf Co., New York, N. Y.
ENVELOPES (Glassine, Cellophane, Waxed)
See Bags

EXCELSIOR, PADS

Boston Excelsior Co., New York, N. Y.
Excelsior Wrapper Co., Chicago, Ill.
Fargo Paper Co., Fargo, N. D.
Quincy North StarCo., Quincy, Ill.
Selle & Co., H. W., Chicago, Ill.

FOIL (Tin, Lead and Composition)

Aluminum Co. of America, Pittsburgh, Pa.
Hirst Co., Adolphe, New York, N. Y.
Lehmaier & Schwartz, New York, N. Y.
Midland Metal Co., Inc., Chicago, Ill.
Reynolds Metal Co., Louisville, Ky.—Insert 116-117

FOLDING BOXES

See Boxes (Folding Carton)

GAUGES, PAPER

Cady Co., E. J., Chicago, Ill.
Perkins & Son, Inc., B. F., Holyoke, Mass. —114

GLUES AND PASTES

See Adhesives

GLUE HEATERS AND GLUE POTS

Beckwith Machine Co., Ravenna, Ohio
New Advance Machinery Co., Van Wert, Ohio

GLUING MACHINES FOR LABELS, ETC.

Burt Machine Co., Baltimore, Md.—81
Economic Machinery Co., Worcester,Mass.—86
Grammes & Sons, Inc., L. F., Allentown, Pa.
Knowlton Co., M. D., Rochester, N. Y.
McDonald Engineering Corp., Brooklyn, N. Y.—105
National Packaging Machinery Co., Boston, Mass.—106-109
New Jersey Machine Corp., Hoboken, N. J.
Potdevin Machinery Co., Brooklyn, N. Y.
Pneumatic Scale Corp., Norfolk Downs, Mass., 115-116
Stokes & Smith Co., Philadelphia, Pa.—124
Triangle Package Machinery Co., Chicago, Ill., 130

GUMMED TAPE (Plain, Printed, Colored)

Badger State Paper Co., Milwaukee, Wis.
Bird & Son, E., Walpole, Mass.
Better Packages, Shelton, Conn.
Central Paper Co., Menasha, Wis.
Chicago Gummed Tape Co., Chicago, Ill.
Crowell Corp., The, Yorklyn, Del.
Edgewater Paper Co., Menasha, Wis.
Gummed Products Co., Troy, O.
Holyoke Paper Corp. New York, N. Y.
Hudson Bag Co., Brooklyn, N. Y.
Lambooy Label & Wrapper Co., Kalamazoo, Mich.
Mathias & Freeman Paper Co.—Insert 104-105
Metal Specialties Co., Chicago, Ill.
Moore & Thompson Paper Co., Bellows Falls, Vt.
McLaurin-Jones, Brookfield, Mass.
Mid-States Gummed Paper Co., Chicago, Ill.
Nashua Gummed & Coated Paper Co., Nashua, N. H.
Paper Service Co., The, Lockland, O.
Tanglefoot Co., Grand Rapids, Mich.

HOISTS (Chain)

Box & Co., Inc., Alfred, Philadelphia, Pa.
Chisholm-Moore Mfg. Co., Cleveland, O.
Ford Chain Block Co., Philadelphia, Pa.
Green Co., Inc., G. S., New York, N. Y.
Harrington Co., Philadelphia, Pa.
Morris, Inc., Herbert, Buffalo, N. Y.
Roeper Crane & Hoist Works, Inc., Reading, Pa.
Seattle Chain & Mfg. Co., Seattle, Wash.
Wright Mfg. Co., Lisbon, O.
Yale & Towne Mfg. Co., Stamford, Conn.

INKS, MARKING

Binney & Smith, New York, N. Y.
Bradley Stencil Mach. Co., St. Louis, Mo.
Diagraph Stencil Mach. Corp., St. Louis, Mo.
Garvey Fountain Brush & Ink Co., St. Louis, Mo.
Marsh Stencil Machine Co., Belleville, Ill.

INSERTS, PACKAGE
See Lithographers

IRONS, BRANDING

Everhot Mfg. Co., Maywood, Ill.

JARS, GLASS
See Bottles, Glass

KRAFT PAPER (Plain, Colored, Printed)

Bogalusa Paper Co., Bogalusa, La.
Brown Co., Portland, Maine
Mosinee Mills, Chicago, Ill.
Tomahawk Paper Co., Chicago, Ill.

LABELS, STICKERS (Gummed)

Eastern Tin Ticket & Tag Co., Perkasie, Pa.
Eveready Label Co., New York, N. Y.
Fenton Label Co., Philadelphia, Pa.
Kalamazoo Label Co., Kalamazoo, Mich.
Lambooy Label & Wrapper Co., Kalamazoo, Mich.
May Co., J. L., New York, N. Y.
McLaurin-Jones, Brookfield, Mass.
Salisbury Mfg. Co., Providence, R. I.
St. Louis Sticker Co., St. Louis, Mo.
Thomas Stationery Mfg. Co., Springfield, O.

LABELS (Embossed)

Dennison Mfg. Co., Framingham, Mass.
Foxon Co.,The, Providence, R. I.
Krause, Inc., R. M., New York, N. Y.
Stanley Mfg. Co., The, Rayton, O.

LABELS (Lithographed)
See Lithographers

LACE PAPER

American Lace Paper Co., Milwaukee, Wis.
Marathon Paper Mills Co., Wis.
Milwaukee Lace Paper Co., Milwaukee, Wis.

LEATHER (Imitation)

Dupont Fabrikoid Co., New York, N. Y.
Griffin Co., The, H. C., New York—91
Keratol Co., The, Newark, N. J.
Whiting Co., C. R., Newark, N. J.—Insert 122-123

LINERS (Waxed)
See Waxed Paper

LITHOGRAPHERS (Paper and Metal)

Acme Metal Decorating Co., Brooklyn,N. Y.
American Can Co., New York, N. Y.
Atlantic Litho. & Ptg. Co., New York, N. Y.
Brandau - Craig - Dickerson Co., Nashville, Tenn.
Brett Litho. Co., Long Island City, N. Y.
Brooks Bank Note Co., Springfield, Mass.—78-79
Brown & Bigelow, Inc., St. Paul, Minn.
Brown, Blodgett Co., St. Paul, Minn.
Bushong & Co., Portland, Ore.
Carlisle & Co., A., San Francisco, Cal.

Buyers' Directory of the Packaging Industries

For information concerning equipment listed below, see catalog pages indicated by numbers appearing after advertisers' listing

Columbia Planograph Co., Washington, D. C.
Columbian Offset Co., Chicago, Ill.
Columbus Bank Note Co., Columbus, O.
Continental Can Co., New York, N.Y.
Curran Ptg. Co., Con. P., St.Louis, Mo.
Donaldson Litho. Co., Newport, Ky.
Edwards & Deutsche Litho. Co., Chicago, Ill.
Erie Litho. & Printing Co., Erie, Pa.
Federal Litho. Co., Detroit, Mich.
Federal Litho. Co., Washington, D. C.
Forbes Litho. Mfg. Co., Boston, Mass.
Forman-Basset Co., Cleveland, O.
Fort Pitt Litho. Co., Pittsburgh, Pa.
Galloway Litho. Co., San Francisco, Cal.
Genesee Valley Litho. Co., Rochester, N. Y.
Gerlach-Barklow Co., Joliet, Ill.
Goes Litho. Co., Chicago, Ill.
Gugler Lithograph Co., Milwaukee, Wis.
Harris Ptg. & Eng. Co., Cleveland, O.
Henderson Litho. Co., Cincinnati, O.
Heywood Co., R. R., New York, N. Y.—Insert 94-95
Hutson & Co., C. S., Los Angeles, Cal.
Imperial Litho. Co., Milwaukee, Wis.
Inland Offset Co., Chicago, Ill.
Irwin-Hidson Co., Portland, Ore.
Karle Litho. Co., Rochester, N. Y.
Kaumagraph Co., New York, N. Y.
Kellogg & Bulkley, Hartford, Conn.
Magill-Weinsheimer Co., Chicago, Ill.
Merchants Litho. Co., Chicago, Ill.
Metal Lithograph Co., Brooklyn, N. Y.
Meyercord Co., Chicago, Ill.
Michigan Litho. Co., Grand Rapids, Mich.
Monasch Litho. Co., Minneapolis, Minn.
Moore Co., C. R., Pittsburgh, Pa.
Munro & Harford Co., New York City
National Decalcomania Co., Philadelphia, Pa.
National Prtg. & Engr. Co., Chicago, Ill.
Neuner Corporation, The, Los Angeles, Cal.
Niagara Litho. Co., Buffalo, N. Y.
Northwestern Litho. Co., Milwaukee, Wis.
Olsen Litho. Co., San Francisco, Cal.
Peterson Litho. & Print. Co., Omaha, Neb.
Potomac Lithograph Co., Washington, D. C.
Powers Co., W. F., New York, N. Y.
Premier Litho. Co., Chicago, Ill.
Randolph Box & Label Co., Chicago, Ill.
Regensteiner Corporation, Chicago, Ill.
Reserve Litho. & Ptg. Co., Cleveland, O.
Riverside Printing Co., Milwaukee, Wis.
Rochester Folding Box Co., Rochester, N. Y.—117
Rode & Brand, Inc., New York, N. Y.
Rogers, William J., Washington, D. C.
Sale Litho. Co., Buffalo, N. Y.
Schmidt Litho. Co., Theo. A., Chicago, Ill.—119
Schmidt Litho. Co., San Francisco, Cal.
Schulz Litho. Co., A. C., Milwaukee, Wis.
Snyder & Black, Inc., New York, N. Y.
Standard Ptg. Co., Louisville, Ky.
Stecher Litho. Co., Rochester, N. Y.
Strobridge Litho. Co., Cincinnati, O.
Stubbs Co., The, Detroit, Mich.
Tin Decorating Co., Baltimore, Md.
Traung Label & Litho. Co., San Francisco, Cal.
Trautmann, Bailey & Blampey, New York, N. Y.—Insert 100-101
Union Litho. Co., Inc., San Francisco, Cal.
U. S. Ptg. & Litho. Co., Cincinnati, O.
Walker Litho. & Pub. Co., Boston, Mass.
Weber Litho. Co., Chicago, Ill.
Western Litho. Co., Los Angeles, Cal.
Wilmanns Bros. Co., Milwaukee, Wis.
Zeuch Co., Wm., Chicago, Ill.

MACHINES (Automatic Weighing, Filling)
American Machine & Foundry Co., Brooklyn, N. Y.
Anderson, Inc., E. D., New York, N. Y.—65-66
Bates Valve Bag Co., Chicago, Ill.
Ferguson Co., J. L., Joliet, Ill.—88-90
Hesser Machine Co., New York, N. Y.
Hoepner Automatic Machinery Corp., Buffalo, N. Y.—95
Johnson Automatic Sealer Co., Battle Creek, Mich.—97-100
National Packaging Machinery Co., Boston, Mass.—106-109
Peters Machinery Co., Chicago, Ill.—113
Pneumatic Scale Corp., Norfolk Downs, Mass.—115-116
Redington Co., F. B., Chicago, Ill.
Scale & Machinery, Inc., New York, N. Y.—118
Small Mfg. Co., C. T., St. Louis, Mo.
Stokes & Smith Co., Philadelphia, Pa.—124
Triangle Package Machinery Co., Chicago, Ill.—130

MACHINES (Bottle Capping and Sealing)
Anchor Cap & Closure Corp., Long Island City, N. Y.
American Machine & Foundry Co., Brooklyn, N. Y.
Capem Machinery Corp., Buffalo, N. Y.
Crown Cork & Seal Co., Baltimore, Md.
Elgin Mfg. Co., Elgin, Ill.
Horix Manufacturing Co., Pittsburgh, Pa.—96
Illinois Glass Co., Alton, Ill.
Kiefer Machine Co., Karl, Cincinnati, O.—104
Pneumatic Scale Corp., Norfolk Downs, Mass.—115-116
Small Mfg. Co., C. T., St. Louis, Mo.
U. S. Bottlers Machinery Corp., Chicago, Ill.

MACHINES (Bottle Washing)
Crown Cork & Seal Co., Baltimore, Md.
Kiefer Machine Co., Karl., Cincinnati, O.—104
Illinois Glass Co., Alton, Ill.
U. S. Bottlers Machinery Co., Chicago, Ill.

MACHINES, BOX SEALING (Adhesive)
Bliss Co., Inc., H. R., Niagara Falls, N. Y.—73-76
Ferguson Co., J. L., Joliet, Ill.—88-90
Johnson Automatic Sealer Co., Ltd., Battle Creek, Mich.—97-100
Jones, James H., Chicago, Ill.
Robins & Co., A. K., Baltimore, Md.
Standard Sealing & Equipment Corp., Long Island City, N. Y.—123

MACHINES, BOX SEALING (Wire)
Acme Staple Co., Camden, N. J.
Bliss Co., Inc., H. R., Niagara Falls, N. Y.—73-76
Jones, James H., Chicago, Ill.
Latham Machinery Co., Chicago, Ill.—102-103
Morrison Co., J. L., Niagara Falls, N. Y.
New Jersey Wire Stitching Co., Camden, N. J.

LINERS (Bag, Barrel and Box)
Arkell Safety Bag Co., New York, N. Y.
Angier Corp., Framingham, Mass.
Bemis Bros. Bag Co., St. Louis, Mo.
Coated Paper Products Co., Minerva, O.
Edgewater Paper Co., Menasha, Wis.
Fort Orange Paper Co., Castleton-on-Hudson, N. Y.—Insert 92-93
Paper Service Co., The, Lockland, O.
Rexford Paper Co., Milwaukee, Wis.
River Raisin Paper Co., Monroe, Mich.
Safepack Mills, Millis, Mass.

MACHINES (Box Strapping)
Acme Steel Co., Chicago, Ill.—62
Gerrard Co., Inc., The, Chicago, Ill.—92
Signode Steel Strapping Co., Chicago, Ill.—120
Stanley Works, New Britain, Conn.
Tennant & Sons, C., New York, N. Y.

MACHINES, BUNDLE TYING (Twine)
Bunn Co., B. H., Chicago, Ill.—80
National Bundle Tyer Co., Blissfield, Mich.

MACHINES (Butter, Print)
Automat Molding & Folding Co., Toledo, O.—70-71
Pneumatic Scale Corp., Norfolk Downs, Mass.—115-116
Redington Co., F. B., Chicago, Ill.

MACHINES (Can Capping)
American Can Co., New York, N. Y.
Continental Can Co., New York, N. Y.
Capem Machinery Corp., Buffalo, N. Y.
Elgin Mfg. Co., Elgin, O.
Kiefer Machine Co., Karl, Cincinnati, O.—104
Phoenix-Hermetic Co., Chicago, Ill.
Pneumatic Scale Corp., Norfolk Downs, Mass.—115-116
Small Mfg. Co., C. T., St. Louis, Mo.
U. S. Bottlers Machinery Corp., Chicago, Ill.
Williams Sealing Corp., Decatur, Ill.

MACHINES (Can Casing)
Burt Machine Co., Baltimore, Md.—81
Ferguson Co., J. L., Joliet, Ill.—88-90
Knapp Corp., Fred H., Ridgewood, N. J.

MACHINES (Can Closing and Sealing)
American Can Co., New York, N. Y.
Capem Machinery Corp., Buffalo, N. Y.
Continental Can Co., New York, N. Y.
Elgin Mfg. Co., Elgin, Ill.
Kiefer Machine Co., Karl, Cincinnati, O.—104
National Packaging Machinery Co., Boston, Mass.—106-109
Pneumatic Scale Corp., Norfolk Downs, Mass.—115-116
R. C. Can Co., St. Louis, Mo.
Small Mfg. Co., C. T., St. Louis, Mo.
U. S. Bottlers Machinery Co., Chicago, Ill.

MACHINES (Can Filling)
Bruno Mfg.Co., Buffalo, N. Y.—77
Colton Co., Arthur, Detroit, Mich.
Elgin Mfg. Co., Elgin, O.
Ferguson Co., J. L., Joliet, Ill.—88-90
Filler Machine Co., Philadelphia, Pa.
Horix Manufacturing Co., Pittsburgh, Pa.—96
Kiefer Machine Co., Karl, The, Cincinnati, O.—104
National Acme Co., Cleveland, O.
National Packaging Machinery Co., Boston, Mass.—106-109
Pneumatic Scale Corp., Norfolk Downs, Mass.—115-116
Scale & Machinery, Inc., New York, N. Y.—118
Sprague-Sells Corp., Chicago, Ill.—122
Small Mfg. Co., C. T., New York, N. Y.
Stokes & SmithCo., Philadelphia, Pa.—124
Triangle Packaging Machinery Co., Chicago, Ill.—130
U. S. Bottlers Machinery Co., Chicago, Ill.

MACHINES (Cartoning)
Anderson, Inc., E. D., New York, N. Y.—65-66
Automat Molding & Folding Co., Toledo, O.—70-71
Cartoning Machinery Corp., Newport, R. I.—83
Ferguson Co., J. L., Joliet, Ill.—88-90
Hoepner Automatic Machinery Corp., Buffalo, N. Y.—95
Johnson Auto Sealer Co., Ltd., Battle Creek, Mich.—97-100
Jones & Co., R. A., Covington, Ky.
National Packaging Machinery Co., Boston, Mass.—106-109
Peters Machinery Co., Chicago, Ill.—113
Redington Co., F. B., Chicago, Ill.
Stokes & Smith Co., Philadelphia, Pa.—124
Triangle Package Machinery Co., Chicago, Ill.—130

MACHINES (Carton Forming, Lining, Folding and Closing)
See Machines (Cartoning)

MACHINES (Collapsible Tube Filling)
Colton Co., Arthur, Detroit, Mich.
Kiefer Machine Co., Karl, Cincinnati, O.—104
Stokes Machine Co., F. J., Philadelphia, Pa.

MACHINES (Corking)
Ermold Co., Ed., New York, N. Y.
Kiefer Machine Co., Karl, Cincinnati, O.—104
McDonald Engineering Corp., Brooklyn, N. Y.—105

MACHINES (Envelope and Bag Filling)
American Machine & Foundry Co., Brooklyn, N. Y.
Anderson, Inc., E. D., New York, N. Y.—65-66
Brown Bag Filling Machine Co., Fitchburg, Mass.
Hoepner Automatic Machinery Co., Buffalo, N. Y.—95
National Packaging Machinery Co., Boston, Mass.—106-109
Pneumatic Scale Corp., Norfolk Downs, Mass.—115-116
Scale & Machinery, Inc., New York, N. Y.—118
Stokes & Smith Co., Philadelphia, Pa.—124
Triangle Package Machinery Co., Chicago, Ill.—130

MACHINES (Labeling)
Arenco Machine Co., New York, N. Y.—68-69
Burt Machine Co., Baltimore, Md.—81
Economic Machinery Co., Worcester, Mass.—86
Knapp Co., F. M., Ridgewood, N. J.
McDonald Engineering Corp., Brooklyn, N. Y.—105
National Labeling Machinery Co., Long Island City, N. Y.
O. & J. Machine Corp., Worcester, Mass.
Pneumatic Scale Corp., Norfolk Downs, Mass.—115-116
Potdevin Machine Co., Brooklyn, N. Y.

MACHINES, LINING CARTON
Anderson, Inc., E. D., New York, N. Y.—65-66
Cartoning Machinery Corp., Newport, R. I.—83
Johnson Automatic Sealer Co., Ltd., Battle Creek, Mich.—97-100
National Packaging Machinery Co., Boston, Mass.—106-109
Peters Machinery Co., Chicago, Ill.—113
Pneumatic Scale Corp., Norfolk Downs, Mass.—115-116

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Buyers' Directory of the Packaging Industries

For information concerning equipment listed below, see catalog pages indicated by numbers appearing after advertisers' listing

MACHINES (Liquid Filling)
Bruno Mfg. Co., Buffalo, N. Y.—77
Colton Co., Arthur, Detroit, Mich.
Elgin Mfg. Co., Elgin, O.
Horix Mfg. Co., Pittsburgh, Pa.—96
Kiefer Machine Co., Karl, Cincinnati, O.—104
National Acme Co., Cleveland, O.
Pneumatic Scale Corp., Norfolk Downs, Mass.—115-116
U. S. Bottlers Machinery Co., Chicago, Ill.

MACHINES (Paper Box Forming)
Johnson Automatic Sealer Co., Ltd., Battle Creek, Mich.—97-100
National Folding Box Co., New Haven, Conn.
National Packaging Machinery Co., Boston, Mass.—106-109
New Jersey Machine Co., Hoboken, N. J.
Pneumatic Scale Corp., Norfolk Downs, Mass.—115-116
Self Locking Machine Co., Chicago, Ill.
Stokes & Smith Co., Philadelphia, Pa.—124

MACHINES (Paper Can Making)
Knowlton Co., M. D., Rochester, N. Y.
Langston Co., Samuel M., Camden, N. J.
National Paper Can Co., Milwaukee, Wis.
Small Mfg. Co., C. T., St. Louis, Mo.
Staude Mfg. Co., E. G., St. Paul, Minn.

MACHINES (Roll Wrapping)
Anderson, Inc., E. D., New York, N. Y.—65-66
Package Machinery Co., Springfield, Mass.—110-111
Redington Co., F. B., Chicago, Ill.

MACHINES (Special Production)
Arenco Machine Co., New York, N. Y.—68-69
Special Production Machines, Inc., Norfolk Downs, Mass.—121

MACHINES (Tacking)
Acme Staple Co., Camden, N. J.
Acme Steel Co., Chicago, Ill.—82
Automatic Stapler Co., Chicago, Ill.
Gerrard Co., Inc., Chicago, Ill.—92
Signode Steel Strapping Co., Chicago, Ill.—120

MACHINES (Tape Moistening)
Better Packages, Inc., Shelton, Conn.
Edgewater Paper Co., Menasha, Wis.
Holyoke Paper Corp., New York, N. Y.
McLaurin-Jones, Inc., Brookfield, Mass.
Metal Specialties Co., Chicago, Ill.
Mid-States Gummed Paper Co., Chicago, Ill.
Nashua Package Sealer Co., Inc., Nashua, N. H.
Paper Utilities Corp., Chicago, Ill.
Rexford Paper Co., Milwaukee, Wis.

MACHINES (Vacuum Bottle Filling)
Bruno Manufacturing Co., Buffalo, N. Y.—77
Horix Manufacturing Co., Pittsburgh, Pa.—96
Kiefer Machine Co., Karl, Cincinnati, O.—104
Pneumatic Scale Corp., Norfolk Downs, Mass.—115-116

MACHINES (Vending)
Consolidated Automatic Merchandising Corp., New York, N. Y.
Doehler Die Castings Co., New York, N. Y.

MACHINES, WRAPPING (Bread)
American Machine & Foundry Co., Brooklyn, N. Y.
Battle Creek Wrapping Machine Co., Battle Creek, Mich.—72
National Bread Wrapper Co., Nashua, N. H.

MACHINES, WRAPPING (Butter)
Automat Molding & Folding Co., Toledo, O.—70-71
Battle Creek Wrapping Machine Co., Battle Creek, Mich.—72
Packaging Machinery Co., Springfield, Mass.—110-111
Pneumatic Scale Corp., Norfolk Downs, Mass.—115-116
Redington Co., F. B., Chicago, Ill.

MACHINES (Wrapping Package)
American Machine & Foundry Co., Brooklyn, N. Y.
Anderson, Inc., E. D., New York, N. Y.—65-66
Automat Molding & Folding Co., Toledo, O.—70-71
Battle Creek Wrapping Machine Co., Battle Creek, Mich.—72
Cartoning Machinery Corp., Newport, R. I.—83
Ferguson Co., The, J. L., Joliet, Ill.—88-90
Johnson Automatic Sealer Co., Ltd., Battle Creek, Mich.—97-100
National Packaging Machinery Co., Boston, Mass.—106-109
Package Machinery Co., Springfield, Mass.—110-111
Peters Machinery Co., Chicago, Ill.—113
Pneumatic Scale Corp., Norfolk Downs, Mass.—115-116
Redington Co., F. B., Chicago, Ill.
Stokes & Smith Co., Philadelphia, Pa.—124

METAL DISPLAYS (Decorated)
American Can Co., New York, N. Y.
Continental Can Co., New York, N. Y.
Robertson Steel & Iron Co., W. F., Springfield, O.
Tin Decorating Co., Baltimore, Md.

PACKAGE DESIGN
Bendix Paper Co., New York, N. Y.—Insert 72-73
Burt Co., Ltd., F. N., Buffalo, N. Y.—Insert 82-83
Central Litho. Co., Cleveland, O.
Consolidated Paper Co., Monroe, Mich.—85
Fort Orange Paper Co., Castleton-on-Hudson, N. Y.—92-93
Forsman Co., C. H., Inc., New York, N. Y.
Gair Co., Robert, New York, N. Y.
Heywood Co., R. R., New York, N. Y.—Insert 94-95
Ritchie & Co., W. C., Chicago, Ill.—Insert 118-119
Rowell Co., Inc., E. N., Batavia, N. Y.—Insert 120-121
Schmidt Litho. Co., Theo. A., Chicago, Ill.—119
Sutherland Paper Co., Kalamazoo, Mich.—125

PACKAGE INSERTS
See Lithographers

PACKAGE WRAPS
See Box Wraps and Dressings

PACKING MATERIAL (Absorbent
International Paper Co., New York, N. Y.
Kimberly-Clark Co., Neenah, Wis.
Rochester Folding Box Co., Rochester, N. Y.—117

PADS (Absorbent Packing)
Kimberly-Clark Co., Chicago, Ill.
Rochester Folding Box Co., Rochester, N. Y.—117

PAILS (Fibre)
Arvey Manufacturing Co., Chicago, Ill.
Marathon Paper Mills Co., Rothschild, Wis.
Master Package Corp., Owen, Wis.
Sefton Mfg. Corp., Chicago, Ill.
Sutherland Paper Co., Kalamazoo, Mich.—125

PAPERS (Cheviot)
Bradner Smith & Co., Chicago, Ill.
De Jonge & Co., Louis, New York, N. Y.—Insert 84-85
Holyoke Paper Corp., New York, N. Y.
Kimberly-Clark Co., Neenah, Wis.
Knowlton Bros., Watertown, N. Y.
Matthias & Freeman Paper Co., Philadelphia, Pa.—Insert 104-105
Pejepscot Paper Co., New York, N. Y.
Queen City Paper Co., Cincinnati, O.
Walther & Co., Inc., Brooklyn, N. Y.—Insert 124-125

PAPER (Embossed)
Aluminum Co. of America, Pittsburgh, Pa.
Beekman Paper & Card Co., Inc., New York, N. Y.
Bendix Paper Co., New York, N. Y.—Insert 72-73
Collins Mfg. Co., A. M., Philadelphia, Pa.
De Jonge & Co., Louis, New York, N. Y.—Insert 84-85
Dist. of Columbia Paper Mfg. Co., Washington, D. C.
Hampden Glazed Paper & Card Co., Holyoke, Mass.—93
Holyoke Paper Corp., New York, N. Y.
Japan Paper Co., New York, N. Y.
Keller-Dorian Paper Co., New York, N. Y.
Marvellum Co., Holyoke, Mass.
Matthias & Freeman Paper Co., Philadelphia, Pa.—Insert 104-105
Middlesex Products Co., Boston, Mass.
Nashua Gummed & Coated Paper Co., Nashua, N. H.
New England Card & Paper Co., Springfield, Mass.
New York-New England Paper Co., Holyoke, Mass.
Paper Service Co., Philadelphia, Pa.
Pinco Papers, Inc., Camden, N. J.—Insert 112-113
Queen City Paper Co., Cincinnati, O.
Reynolds Metal Co., Louisville, Ky.—Insert 116-117
Royal Card & Paper Co., New York, N. Y.
Tamm & Co., New York, N. Y.
Whiting & Co., C. R., Newark, N. J.—Insert 122-123
Whiting-Patterson Co., Philadelphia, Pa.—Insert 114-115

PAPER (Embossed Glassine)
Deerfield Glassine Co., Monroe Bridge, Mass.
Hartford City Paper Co., Hartford City, Ind.—94
Rhinelander Paper Co., Rhinelander, Wis.
Warren Mfg. Co., New York, N. Y.—128-129
Westfield River Paper Co., Inc., Russell, Mass.—Insert Facing 130

PAPERS (Fancy)
Addison Lithographing Co., Rochester, N. Y.
Aluminum Co. of America, Pittsburgh, Pa.
American Tissue Mills, Holyoke, Mass.—63
Beekman Paper & Card Co., New York, N. Y.
Bendix Paper Co., New York, N. Y.—Insert 72-73
Central Litho. Co., Cleveland, O.
Collins Mfg. Co., A. M., Philadelphia, Pa.
Datz & Son, A. S., Philadelphia, Pa.
De Jonge & Co., Louis, New York, N. Y.—Insert 84-85
Dist. of Columbia Paper Mfg. Co., Washington, D. C.
Hampden Glazed Paper & Card Co., Holyoke, Mass.—93
Heywood & Co., R. R., New York, N. Y.—Insert 94-95
Holyoke Paper Corp., New York, N. Y.
Japan Paper Co., New York, N. Y.
Keller-Dorian Paper Co., New York, N. Y.
Kimberly-Clark Co., Neenah, Wis.
Lebam Papers, Chicago, Ill.
Lord Baltimore Press, Baltimore, Md.
Marvellum Co., Holyoke, Mass.
Matthias & Freman Paper Co., Philadelphia, Pa.—Insert 104-105
Middlesex Products Co., Boston, Mass.
Nashua Gummed & Coated Paper Co., Nashua, N. H.
New England Card & Paper Co., Springfield, Mass.
New York & New England Paper Co., Holyoke, Mass.
Paper Service Co., Philadelphia, Pa.
Pinco Papers, Inc., Camden, N. J.—Insert 112-113
Reynolds Metal Co., Louisville, Ky.—Insert 116-117
Schmidt Litho. Co., Theo. A., Chicago, Ill.—119
Tamm & Co., New York, N. Y.
Trautman-Bailey & Blampey, New York, N. Y.—Insert 100-101
Walther & Co., Brooklyn, N. Y.—Insert 124-125
Whiting & Co., Inc., C. R., Newark, N. J.—122-123
Whiting-Patterson Co., Philadelphia, Pa.—Insert 114-115
Williams & Co., Inc., Chas. W., New York, N. Y.

PAPERS (Flint Glazed)
Datz & Son, A. S., Philadelphia, Pa.
De Jonge & Co., Louis, New York, N. Y.—Insert 84-85
Hampden Glazed Paper & Card Co., Holyoke, Mass.—93
Holyoke Paper Corp., New York, N. Y.
Keller-Dorian Paper Co., New York, N. Y.
Matthias & Freeman Paper Co., Philadelphia, Pa.—Insert 104-105
Middlesex Products Co., Boston, Mass.
Paper Service Co., Philadelphia, Pa.
Pinco Papers, Inc., Camden, N. J.—Insert 112-113
Queen City Paper Co., Cincinnati, O.
Walther & Co., Brooklyn, N. Y.—Insert 124-125
Whiting Co., Inc., C. R., Newark, N. J.—Insert 122-123
Whiting-Patterson Co., Inc., Philadelphia, Pa.—Insert 114-115
Williams & Co., Inc., Chas. W., New York, N. Y.

PAPERS (Friction Glazed)
Datz & Son, A. S., Philadelphia, Pa.
Hampden Glazed Paper & Card Co., Holyoke, Mass.—93
Holyoke Paper Corp., New York, N. Y.
Marvellum Co., Holyoke, Mass.
Matthias & Freeman Paper Co., Philadelphia, Pa.—Insert 104-105

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For information concerning equipment listed below, see catalog pages indicated by numbers appearing after advertisers' listing

Middlesex Products Co., Boston, Mass.
Nashua Gummed & Coated Paper Co., Nashua, N. H.
New England Card & Paper Co., Springfield, Mass.
Paper Service Co. of Philadelphia, Pa.
Pinco Papers, Inc., Camden, N. J.—Insert 112-113
Queen City Paper Co., Cincinnati, O.
Walther & Co., Brooklyn, N. Y.—Insert 124-125
Whiting, Inc., C. R., Newark, N. J.—Insert 122-123
Whiting-Patterson Co., Inc., Philadelphia, Pa.—Insert 114-115
Williams & Co., Inc., Chas. W., New York, N. Y.

PAPERS (Gelatine)

Bendix Paper Co., New York, N. Y.—Insert 72-73
Bondy-Herman Co., Chicago, Ill.
Matthias & Freeman Paper Co., Philadelphia, Pa.—Insert 104-105
Stahl, G. A., Philadelphia, Pa.

PAPER (Glassine)

American Tissue Mills, Holyoke, Mass.—63
Deerfield Glassine Co., Monroe Bridge, Mass.
Glassine Paper Co., West Conshohocken, Pa.
Hartford City Paper Co., Hartford City, Ind. —94
Rhinelander Paper Co., Rhinelander, Wis.
Specialty Papers Co., Dayton, O.
Warren Mfg. Co., New York, N. Y.—128-129
Westfield River Paper Co., Inc., Russell, Mass.—Insert Facing 130

PAPERS (Greaseproof)

American Tissue Mills, Holyoke, Mass.—63
Central Waxed Paper Co., Chicago, Ill.
Coated Paper Products Co., Minerva, O.
Deerfield Glassine Co., Monroe Bridge, Mass.
Glassine Paper Co., West Conshohocken, Pa.
Hartford City Paper Co., Hartford City, Ind. —94
Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.—101
Nashua Gummed & Coated Paper Co., Nashua, N. H.
Ohio Waxed Paper Co., Columbus, O.
Paterson Parchment Paper Co., Passaic, N. J. —112
Rhinelander Paper Co., Rhinelander, Wis.
Shamut Waxed Paper Co., Holliston, Mass.
Specialty Papers Co., Dayton, O.
Warren Mfg. Co., New York, N. Y.—128-129
West Carrolton Parchment Co., West Carrolton, O.
Westfield River Paper Co., Inc., Russell, Mass.—Insert Facing 130

PAPER (Gummed)

Chicago Gummed Tape Co., Chicago, Ill.
Edgewater Paper Co., Menasha, Wis.
Holyoke Paper Corp., New York, N. Y.
May Co., J. L., New York, N. Y.
McLaurin-Jones Co., Brookfield, Mass.
Mid-States Gummed Paper Co., Chicago, Ill.
Nashua Gummed & Coated Paper Co., Nashua, N. H.
Peerless Paper Specialty Co., Philadelphia, Pa.
Rexford Paper Co., Milwaukee, Wis.
St. Louis Sticker Co., St. Louis, Mo.
Shuman Co., Frank G., Chicago, Ill.

PAPER (Metallic Coated)

Aluminum Co. of America, Pittsburgh, Pa.
Beekman Paper & Card Co., New York, N. Y.
Collins Mfg. Co., A. M., Philadelphia, Pa.
De Jonge & Co., Louis, New York, N. Y.—Insert 84-85
Hampden Glazed Paper & Card Co., Holyoke, Mass.—93
Holyoke Paper Corp., New York, N. Y.
Japan Paper Co., New York, N. Y.
Keller-Dorian Paper Co., New York, N. Y.
Matthias & Freeman Paper Co., Philadelphia, Pa.—Insert 104-105
New England Card & Paper Co., Springfield, Mass.
New York & New England Paper Co., Holyoke, Mass.
Paper Service Co., Philadelphia, Pa.
Pinco Papers, Inc., Camden, N. J.—Insert 112-113
Reynolds Metal Co., Louisville, Ky.—Insert 116-117
Royal Card & Paper Co., New York, N. Y.
Tamm & Co., New York, N. Y.
Walther & Co., Brooklyn, N. Y.—Insert 124-125
Whiting Co., Inc., C. R., Newark, N. J.—Insert 122-123
Whiting-Patterson Co., Inc., Philadelphia, Pa.—Insert 114-115

PAPER (Parchment, Vegetable)

Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.—101
Paterson Parchment Paper Co., Passaic, N. J.—112
West Carrolton Parchment Co., West Carrolton, O.

PAPERS (Plated)

Collins Mfg. Co., A. M., Philadelphia, Pa.
Datz & Son, A. S., Philadelphia, Pa.
Dejonge & Co., Louis, New York, N. Y.—Insert 84-85
Middlesex Products Co., Boston, Mass.
New England Card & Paper Co., Springfield, Mass.
Paper Service Co., Philadelphia, Pa.
Pinco Papers, Inc., Camden, N. J.—Insert 112-113
Queen City Paper Company, Cincinnati, O.
Walther & Company, Brooklyn, N. Y.—Insert 124-125

PAPERS (Printed)

American Tissue Mills, Holyoke, Mass.—63
Bradner Smith & Co., Chicago, Ill.
Central Lithograph Co., Cleveland, O.
Collins Mfg. Co., A. M., Philadelphia, Pa.
De Jonge & Co., Louis, New York, N. Y.—Insert 84-85
ton, D. C.
Dist. of Columbia Paper Mfg. Co., Washing-
Datz & Co., A. S., Philadelphia, Pa.
Hampden Glazed Paper & Card Co., Holyoke, Mass.—93
Heywood & Co., R. R., New York, N. Y.—Insert 94-95
Holyoke Paper Corp., New York, N. Y.
Keller-Dorian Paper Co., New York, N. Y.
Lord Baltimore Press, Baltimore, Md.
Marvellum Co., Holyoke, Mass.
Matthias & Freeman Paper Co., Philadelphia, Pa.—Insert 104-105
Middlesex Products Co., Boston, Mass.
Nashua Gummed & Coated Paper Co., Nashua, N. H.
New York-New England Paper Co., Holyoke, Mass.
Paper Service Co., Philadelphia, Pa.
Pinco Papers, Inc., Camden, N. J.—Insert 112-113
Queen City Paper Company, Cincinnati, O.
Royal Card & Paper Co., New York, N. Y.
Tamm & Company, New York, N. Y.
Walther & Company, Brooklyn, N. Y.—Insert 124-125
Whiting Co., Inc., C. R., Newark, N. J.—Insert 122-123
Whiting-Patterson Co., Philadelphia, Pa.—Insert 114-115
Williams & Co., Inc., Chas. W., New York, N. Y.

PAPER (Waxed)

American Tissue Mills, Holyoke, Mass.—63
Central Waxed Paper Co., Chicago, Ill.
Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.—101
Menasha Products Co., Chicago, Ill.
Nashua Gummed & Coated Paper Co., Nashua, N. H.
Paterson Parchment Paper Co., Passaic, N. J. —112
Ohio Wax Paper Co., Columbus, O.
Shamut Waxed Paper Co., Holliston, Mass.
Specialty Papers Co., Toledo, O.
Warren Manufacturing Co., New York, N. Y. —128-129
West Carrolton Parchment Co., West Carrolton, O.

PAPER (Wrapping)

Brown Co., Portland, Me.
Edgewater Paper Co., Menasha, Wis.
Mosinee Mills, Chicago, Ill.
Orono Pulp & Paper Co., Bangor, Me.
Pilcher-Hamilton Co., Chicago, Ill.
Sisalkraft Co., Chicago, Ill.

PASTES
See Adhesives

PUMPS (Vacuum)

Kiefer Machine Co., Karl, Cincinnati, O.—104

REGISTERS (Autographic and Manifold)

Egry Register Co., The, Dayton, O.
Hamilton Autographic Register Co., The, Hamilton, O.
Standard Register Co., Dayton, O.
United Autographic Register Co., Chicago, Ill.

ROLL LEAF

Coughlin Manufacturing Co., New York, N. Y.
Griffin & Sons Co., The H., New York, N. Y. —91
Nashua Gummed & Coated Paper Co., Nashua, N. H.
Peerless Roll Leaf Co., Inc., New York, N. Y.

ROPE AND TWINE

American Manufacturing Co., Brooklyn, N. Y.
Ames Harris Neville Co., San Francisco, Cal.
Chelsea Fibre Mills, Brooklyn, N. Y.
Columbian Rope Co., Rome, N. Y.
Mengden & Sons Co., Chicago, Ill.

SCALES (Automatic Check Weighers)

Elder & Robinson Co., Chicago, Ill.
Jacobs Bros. Co., Brooklyn, N. Y.
Merrick Scale Mfg. Co., Passaic, N. J.
Exact Weight Scale Co., Columbus, O.

SCALES (Automatic Weighing, Filling)

American Machine & Foundry Co., Brooklyn, N. Y.
Ferguson Co., J. L., Joliet, Ill.—88-90
Hoepner Automatic Machinery Corp., Buffalo, N. Y.—95
Johnson Automatic Sealer Co., Ltd., Battle Creek, Mich.—97-100
National Packaging Machinery Co., Jamaica Plains, Boston, Mass.—106-109
Packaging Machinery Co., Yonkers, N. Y.
Pneumatic Scale Corp., Norfolk Downs, Mass.—115-116
Scale & Machinery, Inc., New York, N. Y.—118
Stokes & Smith Co., Philadelphia, Pa.—124
Triangle Package Machinery Co., Chicago, Ill.—130
U. S. Bottlers Machinery Co., Chicago, Ill.

SCALES (Net Weighers)

American Machine & Foundry Co., Brooklyn, N. Y.
Ferguson Co., J. L., Joliet, Ill.—88-90
Hoepner Automatic Machinery Corp., Buffalo, N. Y.—95
Johnson Automatic Sealer Co., Ltd., Battle Creek, Mich.—97-100
National Packaging Machinery Co., Jamaica Plain, Boston, Mass.—106-109
Packaging Machinery Co., Yonkers, N. Y.
Pneumatic Scale Corp., Norfolk Downs, Mass.—115-116
Scale & Machinery Co., Inc., New York, N. Y. 118
Stokes & Smith Co., Philadelphia, Pa.—124
Triangle Package Machinery Co., Chicago, Ill.—130

SCALES (Freight, Express)

American Krohn Scale Co., New York, N. Y.
American Scale Co., Kansas City, Mo.
Beckman Bros., Des Moines, Iowa
Brunner Foundry & Mchy. Co., Peru, Ill.
Buffalo Scale Mfg. Co., Inc., Buffalo, N. Y.
Chicago Scale Co., Chicago, Ill.
Dayton Scale Co., Dayton, O.
Fairbanks-Morse Co., Chicago, Ill.
Fairbanks Co., New York, N. Y.
General Automatic Scale Co., St. Louis, Mo.
Howe Scale Co., Rutland, Vt.
International Business Machines Corp., New York, N. Y.
Jacobs Bros. Co., Brooklyn, N. Y.
National Scale Corp., Chicopee Falls, Mass.
Exact Weight Scale Co., Columbus, O.
Standard Scale & Supply Co., Pittsburgh, Pa.
Toledo Scale Co., Toledo, O.
Triner Sales Co., Chicago, Ill.

SEALS AND LABELS
See Lithographers

SEALERS (Cartons and Packages)

Anderson Co., E. D., New York, N. Y.—65-66
Cartoning Machinery Corp., Newport, R. I. —83
Ferguson Co., J. L., Joliet, Ill.—88-90
Johnson Automatic Sealer Co., Ltd., Battle Creek, Mich.—97-100
National PackagingMachinery Co., Boston, Mass.—106-109
Peters Machinery Co., Chicago, Ill.—113
Pneumatic Scale Corp., Norfolk Downs, Mass.—115-116
Standard Sealing Equipment Corp., Long Island City, N. Y.—123
Stokes & Smith Co., Philadelphia, Pa.—124
Triangle Package Machinery Co., Chicago, Ill.—130
U. S. Bottlers Machinery Co., Chicago, Ill.

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SEALS (Bottle and Jar)
See Caps (Bottle and Jar)

SILICATE-OF-SODA
Cibara Mfg. Co., St. Louis, Mo.
Findley Co., The F. G., Milwaukee, Wis.
Frohman Chemical Co., Sandusky, O.
Grasselli Chemical Co., The, Cleveland, O.
Jones, James H., Chicago, Ill.
Mechling Bros. Chemical Co., Camden, N. J.
National Adhesives Corp., New York, N. Y.
Philadelphia Quartz Co., Philadelphia, Pa.
River Raisin Paper Co., Monroe, Mich.
Standard Silicate Co., Cincinnati, O.

SPECIAL ROLL LEAF STAMPING EQUIPMENT
Griffin & Sons Co., The H., New York, N. Y. —91
Peerless Roll Leaf Co., New York, N. Y.

SPRINKLER TOPS
Bridgeport Metal Goods Mfg. Co., Bridgeport, Conn.
Imperial Metal Mfg. Corp., Long Island City, N. Y.
R. C. Can Co., St. Louis, Mo.
SunTube Corp., Hillside, N. J.—126-127
White Metal Mfg. Co., Hoboken, N. J.
Wirz, Inc., A. A., Chester, Pa.

STENCIL BOARD AND BRUSHES (Cutting Machines)
Botts Mfg. Co., Brooklyn, N. Y.
Bradley Stencil Machine Co., St. Louis, Mo.
Burhop Paper Co., Chicago, Ill.
Diagraph Stencil Machine Corp., St. Louis, Mo.
Cross-Glave Co., Inc., Syracuse, N. Y.
Garvey Fountain & Ink Co., St. Louis, Mo.
Gibson Co., Inc., A. C., Buffalo, N. Y.
Ideal Stencil Machine Co., Belleville, Ill.
Marsh Stencil Machine Co., Belleville, Ill.
Shaw Co., The E. C., Cincinnati, O.
Wisconsin Paper & Products Co., Milwaukee, Wis.

STRAPPING (Box)
Acme Steel Co., Chicago, Ill.—62
Gerrard Co., Inc., Chicago, Ill.—92
Signode Steel Strapping Co., Chicago, Ill.—120
Stanley Works, New Britain, Conn.
Tennant & Sons, C. W., New York, N. Y.

TARPAULINS, WATERPROOFED
Ames Harris Neville Co., San Francisco, Cal.
Astrup Co., Cleveland, O.
Atlanta Tent & Awning Co., Atlanta, Ga.
Boyle & Co., Inc., John, Brooklyn, N. Y.
Brooklyn Bag Mfg. Co., Brooklyn, N. Y.
Buckeye Tent & Awning Mfg. Co., Columbus, O.
Carpenter & Co., Chicago, Ill.
Channon Co., H., Chicago, Ill.
Clifton Mfg. Co., Waco, Tex.
Donnelly, Son & Putnam, New York, N. Y.
Fulton Bag & Cotton Mills, Brooklyn, N. Y.
Hetterick Mfg. Co., Toledo, O.
Pittsburgh Waterproof Co., Pittsburgh, Pa.
Reach Textile Co., A. L., New York, N. Y.
Safepack Mills, Millis, Mass.
Upson-Walton Co., Cleveland, O.

TACKING MACHINES
Acme Staple Co., Camden, N. J.
Automatic Stapler Co., Chicago, Ill.
Bliss Co., Inc., H. R., Niagara Falls, N. Y. 73-76
Jones, James H., Chicago, Ill.
Latham Machinery Co., Chicago, Ill.—102-103

TAGS (Shipping, Merchandise)
Danbury Square Box Co., The, Danbury, Conn.
International Tag Co., Chicago, Ill.
May Co., The J. L., New York, N. Y.
Milwaukee Printing Co., Milwaukee, Wis.
Trenton Folding Box Co., Trenton, N. J.

TAPE (Cloth Gummed)
Chicago Gummed Tape Co., Chicago, Ill.
Crowell Corp., Yorklyn, Del.
Holyoke Paper Corp., New York, N. Y.
Mid-States Gummed Paper Co., Chicago, Ill.
Nashua Gummed & Coated Paper Co., Nashua, N. H.
Peerless Paper Specialty, Inc., Philadelphia, Pa.
Rexford Paper Co., Milwaukee, Wis.
Shuman Co., The Frank G., Chicago, Ill.

TAPE (Paper Gummed)
See Gummed Tape

TAPE MOISTENERS
Better Packages, Inc., Sheldon, Conn.
Holyoke Paper Corp., New York, N. Y.
Hummel Co., A. C., Dayton, O.
Metal Specialties Co., Chicago, Ill.
Nashua Package Sealer Co., Nashua, N. H.
Paper Utilities Corp., Chicago, Ill.

TESTERS (Paper and Board)
Cady & Co., E. J., Chicago, Ill.
Perkins & Son, Inc., B. F., Holyoke, Mass. —114

TRACTORS, INDUSTRIAL (Electric)
Atlas Car & Mfg. Co., Cleveland, O.
Automatic Transportation Co., Buffalo, N. Y.
Baker-Raulang Co., Cleveland, O.
Barret-Cravens Co., Chicago, Ill.
Crescent Truck Co., Lebanon, Pa.
Elwell-Parker Electric Co., The, Cleveland, O.
Hebard & Co., W. F., Chicago, Ill.
Lakewood Eng. Co., Cleveland, O.
Mercury Mfg. Co., Chicago, Ill.
Steubing-Cowan Co., Cincinnati, O.
Wright-Hibbard Industrial Electric Truck Co., Phelps, N. Y.
Yale & Towne Mfg. Co., Stamford, Conn.

TIERING MACHINES
Barrett-Cravens Co., Chicago, Ill.
Crescent Truck Co., Lebanon, Pa.
Economy Eng. Co., Chicago, Ill.
Elwell-Parker Electric Co., The, Cleveland, O.
Gifford-Wood Co., Hudson, N. Y.
Hebard & Co., W. F., Chicago, Ill.
Lewis-Shephard Co., Boston, Mass.
Revolvator Co., Jersey City, N. J.

TRUCKS (Hand Lift)
Barrett-Cravens Co., Chicago, Ill.
Lewis-Shephard Co., Boston, Mass.
Plimpton Lift Truck Corp., Stamford, Conn.
Revolvator Co., Jersey City, N. J.
Steubing-Cowan Co., Cincinnati, O.

TIN FOIL
Lehmaier & Schwartz, New York, N. Y.
Midland Metal Co., Chicago, Ill.
Reynolds Metal Co., Louisville, Ky.—Insert 116-117

TUBES (Collapsible)
Aluminum Co. of America, Pittsburgh, Pa.
Atlantic Mfg. Co., Newark, N. J.
Bond Mfg. Corp., Wilmington, Del.
New England Collapsible Tube Co., New York, N. Y.
Peerless Tube Co., Bloomfield, N. J.
Pennsylvania Collapsible Tube Co., Williamsport, Pa.
SunTube Corp., Hillside, N. J.—126-127
Victor Metal Products Corp., Brooklyn, N. Y.
Wheeling Stamping Co., Wheeling, W. Va.
White Metal Mfg. Co., Hoboken, N. J.
Wirz Co., Inc., A. H., Chester, Pa.

TUBES (Mailing)
Champion Container Co., Inc., Philadelphia, Pa.
Mason Box Co., The, Attleboro Falls, Mass.
National Paper Can Co., Milwaukee, Wis.
R. C. Can Company, St. Louis, Mo.
Ritchie & Co., W. C., Chicago, Ill.—118-119
Sefton National Fibre Can Co., St. Louis, Mo.

WADDING (Box)
Kimberly-Clark Co., Chicago, Ill.
Rochester Folding Box Co., Rochester, N. Y. —117
Union Wadding Co., Pautucket, R. I.

WATERPROOF PAPER
Angier Corp., Framingham, Mass.
Edgewater Paper Co., Menasha, Wis.
Rexford Paper Co., Milwaukee, Wis.
Sisalkraft Co., Chicago, Ill.

WINDOW DISPLAY
See Lithographers

WIRE (Reinforcement)
Acme Steel Co., Chicago, Ill.—62
Chicago Steel and Wire Co., Chicago, Ill.
Gerrard Co., Inc., Chicago, Ill.—92
Pittsburgh Steel Co., Pittsburgh, Pa.
Seneca Wire & Mfg. Co., Fostoria, O.
Signode Steel Strapping Co., Chicago, Ill.—120
Stanley Works, New Britain, Conn.

WIRE STAPLING
Acme Steel Co., Chicago, Ill.—62
Bliss Co., Inc., H. R., Niagara Falls, N. H. —73-76
Chicago Steel & Wire Co., Chicago, Ill.
Jones, James H., Chicago, Ill.
Latham Machinery Co., Chicago, Ill.—102-103
Prentiss Co., Geo. H., Holyoke, Mass.

WRAPPERS, BOTTLE (Corrugated)
Consolidated Paper Co., Monroe, Mich.—85
Gair Co., Robert, New York, N. Y.
Gaylord Co., Robert, St. Louis, Mo.
Hinde & Dauche Paper Co., Sandusky, O.
River Raisin Paper Co., Monroe, Mich.
Sefton Manufacturing Co., Chicago, Ill.

WRAPPERS (Printed Glassine)
American Tissue Mills, Holyoke, Mass.—63
Bendix Paper Co., New York, N. Y.—Insert 72-73
Deerfield Glassine Co., Monroe Bridge, Mass.
Glassine Bag & Novelty Co., Rhinelander, Wis.
Hartford City Paper Co., Hartford City, Ind. —94
Heywood & Co., R. R., New York, N. Y.—Insert 94-95
Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.—101
Lambooy Label & Wrapper Co., Kalamazoo, Mich.
Liebs Co., L. A., New York, N. Y.
Lord Baltimore Press, Baltimore, Md.
Menasha Products Co., Chicago, Ill.
Milwaukee Printing Co., Milwaukee, Wis.
Nashua Gummed & Coated Paper Co., Nashua, N. H.
Shellmar Products Co., Chicago, Ill.
Saniwax Paper Co., Kalamazoo, Mich.
Steidinger Press, New York, N. Y.
Warren Mfg. Co., New York, N. Y.—128-129
Westfield River Paper Co., Inc., Russell, Mass.—Insert Facing 130

WRAPPERS (Waxed Paper and Parchment)
American Tissue Mills, Holyoke, Mass.—63
Central Waxed Paper Co., Chicago, Ill.
Coated Paper ProductsCo., Minerva, O.
Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.—101
Marathon Paper Mills, Rothschild, Wis.
Menasha Products Co., Chicago, Ill.
Nashua Gummed & Coated Paper Co., Nashua, N. H.
Newark Paraffine Parchment Paper Co., Newark, N. J.
Ohio Wax Paper Co., Columbus, O.
Paterson Parchment Paper Co., Passaic, N. J. 112
Shamut Waxed Paper Co., Holliston, Mass.
Warren Mfg. Co., New York, N. Y.—128-129
Waterproof Paper & Board Co., Cincinnati, O.
West Carrollton Parchment Co., West Carrollton, O.

WRAPPING PAPER
Angier Corp., Framingham, Mass.
Badger State Paper Co., Milwaukee, Wis.
Brown Co., Portland, Me.
Burhop Paper Co., Chicago, Ill.
Central Paper Co., Menasha, Wis.
Chemical Paper Mfg. Co., Holyoke, Mass.
Continental Paper & Bag Mills, New York, N. Y.
Edgewater Paper Co., Menasha, Wis.
Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.—101
Kimberly-Clark Co., Neenah, Wis.
Mosinee Mills, Chicago, Ill.
Pilcher-Hamilton Co., Chicago, Ill.
Rexford Paper Co., Milwaukee, Wis.
Safepack Mills, Millis, Mass.
Union Bag & Paper Corp., New York, N. Y.
Union Paper & Twine Co., Cleveland, O.
Waterproof Paper & Board Co., Cincinnati, O.
Weyerhaeuser Forest Products, St. Paul, Minn.
York Haven Paper Co., Philadelphia, Pa.

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